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17. ABSTRACT (MAX. 250 WORDS)

Studies concerned with the areas of intellectual, creative, and scientific talent were presented. They were organized under 1.) characteristics, 2.) identification, 3.) achievement motivation and underachievement and 4.) educational programs.

Terman's follow-up study showed that 90% of the gifted men were in the professions, higher business or semi-professions. Politically, the group considered themselves right of center on the conservative radical scale. Other studies of characteristics included Hollingworth's and Strong's.

Under identification certain techniques and procedures were used to assess giftedness in areas other than the intellectually able - such as art, music, creative dance, creative writing, creative dramatics, mechanical talent, and social leadership. Studies that evaluated these areas included Pegnato's, Justman's, and Davis'.

Exploration in achievement motivation and underachievement tended to explain the gap between ability and attainment. Conklin's research stated that many of the underachievers are influenced by bad relationships with parents and peers. Other studies included Barrett's and Shaw's.

Under educational programs, Gallagher's study claimed that social adjustment did not impede intellectual attainments; if it had any influence it was negative because children will purposely scale lower to maintain their social status. Other studies were done by Goldberg, Mann, and Abramson.

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THE GIFTED:*

DIGESTS OF MAJOR STUDIES

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The Gifted

A gifted child is one who has a capacity for superior achievement in some area of human endeavor which has consistently made an outstanding contribution to civilization. Such a broad definition would include academic fields such as languages, social sciences, natural sciences, and mathematics; such art fields as music, graphic and plastic arts, performing arts, and mechanical arts; and the field of human relations. However, the studies included below, reflecting the state of the field itself, are limited to the areas of intellectual, creative, and scientific talent. The studies are organized under the following topics: (1) characteristics, (2) identification, (3) achievement motivation and underachievement, and (4) educational programs.

By necessity, the studies included in this chapter were arbitrarily selected from a rather extensive body of research on the nature and education of the gifted. Other, equally significant studies might have been included were more space available. The authors have tried to select studies which tackled the more fundamental issues and in which sound research methodology was employed.

1. Characteristics of the Gifted.

Much of the basic information about the characteristics, backgrounds and development of the gifted has come from Terman's longitudinal studies and Hollingworth's studies of children with unusually high I.Q.'s. Their findings have been confirmed generally and added to by the studies of large groups of intellectually able children by such researchers as Fred Witty, Merle Sumption, Willard Abraham, Gertrude Hildreth and Walter Barbe.

Terman, Louis M. and Oden, Melita H., The gifted group at mid-life: thirty-five years follow-up of the superior child. Vol. V. Genetic Studies of Genius. Stanford: Stanford University Press, 1951.

Purpose: To determine what intellectually superior children are like, how they differ from the average children; how they develop in youth and as adults, and what some of the factors are that influence their later achievement.

Subjects: 1528 subjects (857 males and 671 females) selected in 1921 on the basis of high intelligence. The average age of the subjects at the inception of the study was 11 years, their mean IQ was 151. They came from every ethnic and racial group then represented in California and from every socioeconomic status. However, the majority were the offspring of intellectually superior parents from above-average homes. They were superior to the generality in physique and health; educational history; variety and depth of interests; character traits; and emotional stability.

Procedures: A field follow-up was made in 1950-52. The procedures used in this follow-up included: administration of a revised form of the Concept Mastery Test (devised in 1939 as an individual adult intelligence test), personal interviews, questionnaires for subjects and spouses, and testing of offspring with Stanford-Binet. This was administered to 1004 gifted subjects and 690 of their spouses.

Results: Follow-up studies in 1927, 1940 and 1946 revealed that the gifted group remained superior to the generality in all areas tested. When the mean age of the gifted group was 44, the 1950-52 follow-up revealed the following results:

Two per cent of the gifted had scores in the 180-189 interval (perfect score 190) and only ten subjects (approximately 1 per cent) scored below 60. The spouse group itself was a superior group. A comparison of CMT scores for gifted subjects in 1950-52 with their childhood Binet IQ showed that the higher the CMT scores, the higher were the Binet IQ levels. There was a positive relationship between CMT score and the level of education. Over 90 per cent of the group had married; over three-fourths reported no serious sex problems. The typical family had 2.4 children. Divorce rate was lower than for the generality. College graduates had lower divorce rates than those who did not graduate from college.

Of those who failed to graduate from college; more women than men were rated as having some or serious difficulties in adjustment. Eighty-seven per cent of the men and 83 per cent of the women entered college and 70 per cent of the men and 67 per cent of the women graduated. In the generality in the decade 1930-1940, less than 8 per cent of those of comparable age were graduated from college. Two-thirds of the men and almost three-fifths of the women who completed college entered graduate school, and over half of the men and a third of the women took one or more advanced degrees. The academic record for the college graduates was superior to the generality of college students. About 80 per cent made an average grade of B or better. Over a third won honors.

Almost half of the men took undergraduate majors in the social sciences; the rest were divided among the physical sciences, engineering and letters. Of the women over one-third majored in social science and the same number in letters; less than 10 per cent went into education and about as many into the physical and biological sciences.

Occupationally, almost 90 per cent of the men were in the professions, higher business or semi-professions. None were in semi or unskilled jobs. Law was the most frequently chosen profession followed by university teaching and engineering. The median income of the men was $9640. Of the women, half were housewives, 8 per cent had part-time jobs and the rest were in full-time employment. Of the married women, less than a third held full-time jobs and about 10 per cent worked part-time. Those women who took advanced degrees were more apt to be employed than those with only a bachelors degree. The median income of the employed women was $4875.

Politically, the group viewed itself slightly right of center on a conservative-radical scale. There was a shift toward conservatism from 1940 to 1950. General health was rated as good or very good by 90 per cent of the men and 80 per cent of the women. Handicapping physical defects were infrequent. Both men and women were not only taller than the generality, but also taller than the average for college students. The incidence of hospitalization among gifted men was slightly below the expectancy for the male population of comparable age. The incidence of hospitalization among gifted women was slightly above the expectancy for the female population of comparable age. The incidence of alcoholism in the gifted population was 1 per cent of gifted men and one half of 1 per cent for women, contrasted to generality of 7 per cent and 1 per cent.

As adults, the gifted remained superior to the generality in nearly every aspect tested, most strikingly in intellectual ability, scholastic attainment and vocational achievement: over 100 are listed in American Men of Science or Who's Who in America but no great composers or creative artists have come out of the group.

Comment: Volume I of the Genetic Studies deals with the early mental and physical traits of the children from the 1922 study. Volume II contains an analysis of the early mental traits of 300 geniuses. Volumes III and IV contain the data from the follow-up study of 1927-28 and those of 1936, 1940 and 1945.

Although the Genetic Studies of Genius are the classic longitudinal studies in this area and much of our present knowledge about the intellectually gifted stems from Terman's findings, there are some limitations which must be kept in mind when projecting the findings from these studies to present-day conceptions about gifted children. The need to keep the study within manageable proportions resulted in a sampling bias. By Terman's own estimate, at least ten per cent of those in the population samples who would have qualified as gifted were not included because they were not nominated by teachers. As a result, pupils of high intelligence who were already "underachieving" in the elementary school were omitted from the sample.

Secondly, the study was restricted to a population drawn chiefly from California's large and medium-sized urban areas. As a result the characteristics attributed to gifted children may well be representative of urban gifted children rather than of gifted children in general. Thirdly, the relationship between intelligence and various physical and personality traits need to be examined more carefully in view of the consistently high relationship between general intelligence and the socio-economic status of parents. It may well be that some of the characteristics which are ascribed to intellectual giftedness, may in fact, be related to socio-economic status instead. For example, Bonsall and Stellfre (M. R. Bonsall and B. Stellfre, The temperament of gifted children, Calif. J. Educ. Res., 1955, 6, 195-199.) found that when socio-economic background was held constant, very few significant differences remained between the temperamental characteristics of gifted and average students and these either were aspects of intelligence, such as greater thoughtfulness, or objectivity or behavioral control. Differences in emotional stability, sociability, friendliness or cooperation were related to social class rather than to intelligence. A similar approach to the analysis of physical characteristics of gifted children as well as to the values they hold, may find differences previously attributed to intelligence to be more significantly related to socio-economic status.

Having followed the group to maturity at mid-life, the paucity of really outstanding, creative individuals in the group raises some questions as to the validity of the term "genius" which Terman originally applied to his subjects. However, the group as a whole achieved professionally and vocationally at a far higher level than the general population and maintained intellectual superiority at least through mid-life. Perhaps Terman's conclusion that gifted people are socially and personally at least as well adjusted as the average would have had to be modified had the group contained a greater proportion of "true geniuses," since it is in such individuals that problems of social or personal adjustment have been found by other researchers in the field. (See, for example, P.A. Witty and H.C. Lehman, Nervous instability and genius: poetry and fiction, J. abnorm soc. Psychol., 24, 77-90, and Nervous instability and genius: some conflicting opinions, J. abnorm soc. Psychol., 24, 486-497.)

Hollingworth, Leta S., Children above 180 IQ. Yonkers-on-Hudson, World Book Company, 1952.

Purpose: To determine the characteristics of children with IQs of above 180.

Subjects: Twelve children who tested above 180 on the Stanford-Binet test (mean IQ 186.72) found by Hollingworth and associates over a 20-year period.

Procedures: Individual case studies made. Data obtained on each subject's family background, educational achievement, intelligence test data and college attendance. Adult intelligence data gathered. Generalizations about children with high IQs made based, in part, on these data and some compiled in an earlier study.

Results: Ten of the subjects were firstborn; one was fourth born and one was sixth. Five subjects were only children; five were from families with one other child; one came from a family of three siblings, all of whom had died at birth; and one subject had six siblings. All of the parents were from either the professional, clerical, or business-proprietor classes. Four children started to read at age 3; two started at age 4; and three of the remaining six read "before kindergarten". General health was always reported as good and physique as superior. There was no apparent pattern in the parental age at the time of the child's birth.

The students seemed to "go through the ceiling of available tests for adult intelligence by the time they are 21 years old." One-third of the subjects showed notable signs of creativeness; another third showed indications to a moderate degree, and the remaining third gave no indications of marked constructive originality.

Such children presented educational problems from their entrance in school. The problems were not only those of school personnel but the problems of the children themselves. Depending on the solution of their problems, such children were either well articulated to school and society or they developed a distaste for school, obstinacy, and recalcitrance, perhaps accompanied by bittnerness. Although all 12 children were identified fairly early in their lives, there were very different degrees of adaptation to school and society, ranging from opposition to rapt and enthusiastic preoccupation. The cases that have achieved most contented and socially useful adaptation were those in which parents, teachers, and principals made prompt use of special gift identification, by seeking educational guidance or taking advantage of such experimental classes for exceptional children as schools had available at the time. The children of superior intelligence were not, as a group, socially annoying.

Comment: The basic limitation of the Hollingworth study lies in its use of the case study method necessitated by the restricted number of children with I.Q.'s above 180. The study provides some valuable hypotheses regarding the special characteristics and problems of gifted children with unusually high intelligence. Hollingworth's most significant contribution was not in specific research studies but rather in her efforts to provide special educational opportunities for intellectually gifted pupils. (See, for example, L.S. Hollingworth, Gifted children: their nature and nurture. New York: The Macmillan Company, 1926, and An enrichment curriculum for rapid learners at Public School 500: the Speyer School, Teach. Coll. Rec., 1938, 39, 296-306.)

Hollingworth, Leta S. and Kaunitz, Ruth M. The centile status of gifted children at maturity. J. Genet. Psychol., 1934, 45, 106-120.

Purpose: To investigate the intellectual status of gifted children as they approach or reach maturity.

Subjects: The subjects of the study were identified in childhood (ages 6-6 to 11-8) as testing above 133 IQ (Stanford-Binet). A sample of 116 was drawn from 148 young people who, as children had attended special classes for the gifted in P.S. 165 in 1922-23.

Procedures: During the year 1932-1933, all of the 116 subjects were retested on the Army Alpha. The median age of the subjects at this time was 18 years 6 months. A sub-sample of 56 of the subjects had been selected for an intensive ten year follow-up. The sub-sample took alternate forms of the Army Alpha in 1924 and again in 1929. The IQ range of the total sample (N=116) in childhood was from 133 to 190; the IQ range of the sub-sample (N=56) was from 135 to 190.

Results: The age at which intelligence tests cease to yield an increment is not precisely known. Fifty-two subjects were retested at a median age of 15 years 1 month and again at a median age of 19 years 1 month with a median gain of 12 IQ points and a median variation of ± 5 points. The range was from -2 to 30 points. On the basis of the Army Alpha norms, 95 of the 116 subjects reached the top centile. Eighty-two per cent of the subjects fell into the same centile of the total white draft population on the Army Alpha as they had occupied in childhood among school children on the Stanford-Binet; the remaining 18 per cent very nearly reached this status. No individual regressed to an average position.

More of the 21 subjects who regressed from the top centile were girls than boys and more were under 18 years of age. The greater regression of the girls is partially explained by the known differences in the Army Alpha medians for men and women. The results of this study afford validation of the predictive power of available mental tests and also demonstrate the constancy of the intellectual development of gifted in terms of centile status.

d'Heurle, Adam, Mellinger, Jeanne C., and Haggard, Earnest A., Personality, intellectual, and achievement patterns in gifted children. Psychol. Monogr., 1959, 73, 1-28, No. 13.

Purpose: To delineate the organization or structure of a variety of factors that determine patterns of academic achievement.

Subjects: Seventy-six pupils enrolled in third grade during the year 1950-51, all in the 90th percentile or above on national norms for both intellectual ability and achievement, were studied until the ninth grade.

Procedures: Reading, arithmetic, and spelling achievement scores were correlated with a series of personality variables derived from Rorschach, Children's Apperception Test (CAT), and behavioral observation. On the 27 personality and parent attitudes variables, relatively high (r = .98 to .78) interjudge reliabilities were obtained. Stanford-Binet I.Q.s and primary mental ability scores were partialled out from these correlations between achievement and personality factors to remove the effects of general mental ability on personality variables. Achievement profiles were prepared.

Results: High general achievers (i.e., high scores on arithmetic, reading and spelling tests) were sensitive and responsive to socialization pressures, accepted adult values, and strived to live up to adult expectations. In school they showed a higher level of adjustment and developed good work habits. High arithmetic achievers presented personality structures similar to the general high achievers but tended to be more spontaneous and creative; skilled in the manipulation of abstract symbols, more aggressive, independent, and self-confident. High reading achievers were withdrawn, reacted negatively to parental authority and were insecure in relation to the adult world. They found difficulty expressing feelings openly in relations with others but showed a great deal of freedom and expansiveness in their fantasy. Their mental approach was strikingly abstract and theoretical except when dealing with objective, quantitative data or organizing problem material, in which case they were markedly inferior. High spelling achievers were passive, dependent on adult authority and sought approval by submission and strict adherence to rules.

The two assumptions that: (1) academic achievement and intellectual abilities are associated with nonintellective factors; and (2) cognitive processes emerge within the personality organization of the individual and are meaningful in terms of his generalized effort to deal with his world as he sees it, were borne out by the findings. The results support the view that "learning", "memory", "intelligence", and "personality" are by no means isolated and independent processes, but rather that they involve various expressions of the person's attempt to deal with and adapt to reality as he sees it.

Strang, Ruth. Gifted adolescents' views of growing up. Except. Child., 1956, 23, 10-15.

Purpose: To obtain information about gifted and average adolescents' views of growing up which may give clues to adolescent adjustment.

Subjects: 1124 Maryland students from grades seven through twelve. 883 (247 junior and 636 senior high) students with mean IQ of 95; and 241 (156 junior and 85 senior high) students with IQ of 120 or higher (gifted).

Procedures: The students were asked to write compositions during class time on the subject, "How It Feels to be Growing Up" and these compositions were analyzed. The recorded IQ for each subject was derived from the school records.

Results: Similarity of Responses between gifted and others: Feelings of dissatisfaction with changes in body growth, functioning, and status were mentioned by about a fourth of each group. 42 per cent of the average and

55 per cent of the gifted students expressed satisfaction with parents or family. Less than 10 per cent of the gifted mentioned problems of mother-father-child relationships such as parental differences with respect to discipline or differences in their feelings toward the two parents. A desire for specific vocation was mentioned by about one-third of both groups. Slightly fewer gave indications of indecision about vocational choices. Approximately one-third of both the average and gifted groups gave indications of self-acceptance. About one-fifth of both groups expressed concern with school success or grades. About one-tenth of the total sample were not entirely satisfied with their school experiences.

Differences in Responses between the gifted and average: The bright students wrote more freely and had a larger total number of responses. They referred to problems of financial security and money more frequently than did the average; their concern for world peace was very marked. Precocious interest in more remote and abstract matters, including morality and religion, was characteristic of the gifted. The most striking differences on the junior high level were in enjoyment of voluntary reading; 42 per cent of the gifted students compared with 13 per cent of the average made some reference to the enjoyment of reading. Concern with social behavior, with making friends and getting along with people was mentioned by about one-fourth of the bright junior high school students -- almost twice as often as by the average junior high school students.

Age Differences Among the Gifted: Interest in sports was much more frequently mentioned by the gifted in junior than in senior high school. They mentioned concern about their family's problems and welfare more often during the junior high school years than they did later. Fewer of the gifted in the senior high than in the junior high school mentioned concern with making friends and getting along with people.

Sex Differences: Voluntary reading was mentioned almost three times as frequently by the gifted girls as by boys. The desire for world peace was mentioned slightly more frequently by the gifted girls than by the gifted boys, but concern with military service was referred to primarily by boys. The gifted girls mentioned concern with problems of morality and religion twice as often as did the boys.

Holland, John L. and Stalnaker, Ruth C. A descriptive study of talented high school seniors: national merit scholars. Bull. of the Nat. Ass. of Sec. Sch. Princ., 1958, 42, 9-21.

Purpose: To describe the characteristics and behavior of 556 Merit Scholars.

Subjects: 556 high school seniors who were winners of National Merit scholarships. From a group of 58,158 seniors in the top five per cent of their classes in each of the states and Puerto Rico, a sample was narrowed to 5,078. The scholars were selected after a second testing. Each of the 556 (402 male and 154 female) subjects were rated and selected by a panel of eight educators. Awards were made on the basis of verbal and mathematical ability, geographical distribution, academic achievement, motivation and personality.

Procedures: The complete data available on each of the scholars were analyzed and a description prepared of the sample as a whole.

Results: On the verbal factor, men and women had average scores of 706.0 and 722.5 respectively (top two per cent of the graduating high school population). On the mathematical factor, men and women have average scores of 735.5 and 693.5 respectively. The sex differences are statistically significant and consistent with findings from other studies.

The career choices of male scholars were characterized by marked interest in scientific activities and problems: 73 per cent intended to follow careers in research, engineering, medicine and architecture; 23 per cent were seeking careers in social service, business, languages and foreign service occupations. The female scholars career choices differed significantly from those of the males. Forty-one per cent planned careers in social service endeavors including teaching, social work, and marriage, while 39 per cent desired careers in science.

The avocational activities paralleled closely those of Terman's sample when his subjects averaged 30 years of age. A high interest in sports and music, coupled with little motivation for woodworking or shop activities characterized both groups. In extra-curricular activities the male Scholars were characterized by their frequent mention of religious, writing (school newspaper and yearbook), musical, athletic, and student council activities and their infrequent mention of community service, language clubs, art work and dance activities. The female Scholars participated most frequently in writing, musical, religious and community service activities and least frequently in debate, scout work, art and dance activities.

Students whose fathers' occupations were classified as "professional" constituted about 30 per cent of the scholars, although professional men represent only about three per cent of the total male population. The male Scholars' goals reflected a high premium on doing a good or necessary job, becoming successful and attaining positions of prominence or managerial responsibilities. They showed little concern for emotional security, marriage, and beauty (art for art's sake). The females placed a great weight on marriage and family life, followed by lesser weights on work values, achievement, and vocational success. In general, females showed little concern for the self-centered values desired by the males such as independence, recognition, and dominance (leadership). They revealed little or no concern about emotional security or beauty as goals.

Warren, Jonathan R. and Heist, Paul A. "Personality attributes of gifted college students", Science, 1960, 132, 330-337.

Purpose: To make an appraisal of the behavioral characteristics of gifted college students as measured by objective personality inventories.

Subjects: The 918 (659 men, 259 women) National Merit Scholars. For purposes of comparison, 841 students (388 from University of California and 453 Michigan State University) representing all four undergraduate years were used. The estimated mean IQ of the Merit Scholars was 150; the minimum IQ was 130.

Procedures: The two groups were compared on (a) College Entrance Examination Board tests: (b) Omnibus Personality Inventory and (c) Allport-Vernon-Lindzey Study of Values.

Results: The higher Ego-strength scores of the National Merit Scholars suggest that they operate at a higher level of personal effectiveness, and that they are more self-confident, resourceful, and independent than the less bright. The higher Complexity scores indicate greater intellectual independence and a tendency toward original, unconventional ways of responding to the environment as well as greater tolerance of ambiguity and greater potential for creativity. The personality structure of the gifted student and his ways of thinking (intellectual rebelliousness, originality, ego-strength and potential for creativity) are conducive to intellectual achievement. The gifted students value the theoretical and aesthetic orientations relatively higher and the economic or utilitarian, relatively lower than do the students in the comparative samples.

Accompanying the high scholastic aptitude of the gifted is a strong attraction to intellectual activity combined with high levels of aesthetic awareness and appreciation. High Aesthetic scores, exhibited particularly by the gifted women, indicate a receptive orientation toward sensory experiences and possibly a predilection for their harmonious organization.

The attribute that most sharply differentiates the gifted of both sexes from unselected college students is a strong disposition toward intellectual activity: liking for reflective and abstract thought; interest in ideas and conceptualization; a rational cognitive approach to reality; and a positive, functional approach to scholarly pursuits.

Gifted students are independent, confident and generally mature in their interactions with the external world. As compared to the normative groups, they have more complex perceptions and reactions. They are less authoritarian and less rigid, to the extent that many are free to become "risk-takers" in the world of ideas. Most of them react with greater originality, imagination and resourcefulness to the stimulation they receive.

Comments: Descriptive studies of the achievement, aptitudes and personality attributes of National Merit Scholars and Certificate of Merit winners have been reported in several articles. (See, for example, J. L. Holland and R. C. Stalnaker, A descriptive study of talented high school seniors: national merit scholars. Bull. Nat. Ass. Sec. Sch. Princ., 1958, 42, 9-21, and J. L. Holland, The achievement, aptitudes, and personalities of national merit scholars and certificate of merit winners, Bull. Nat. Ass. Sec. Sch. Princ., 1960, 44, 100-104.) It should be noted that despite the fact that the basis of the selection for the National Merit Scholars and Certificate winners consisted primarily of tests of aptitude and acquired knowledge -- generally considered of a "convergent thinking" nature -- the population which was selected by these instruments had many characteristics in common with groups selected on the basis of "divergent thinking" tests. Is the similarity due to the fact that the subjective element in the selection process (interviews with candidates) tended to single out those individuals who possess the more creative traits associated with intellectuality; or, does the selection of those who achieve the very highest scores on tests of aptitude and acquired knowledge and who have been highly successful in high school as measured by grades of itself result in the selection of students who resemble those rated high on divergent thinking and creativity?

Getzels, Jack W. and Jackson, Philip W., The study of giftedness: a multididimensional approach. The gifted student. Washington, D.C.: U.S. Government Printing Office, Cooperative Research Monograph No. 2, 1960, pp. 1-18.

Purpose: To discover the significant variables differentiating the creative from the intelligence person.

Subjects: The total population of 449 pupils in a private secondary school from which a high intelligence group of 28 and a high creativity group of 26 were selected.

Procedures: The entire population was tested on five measures of creativity, (adapted from Guilford and Cattell) as follows: word association, uses for things, hidden shapes, fables and make-up problems. A Stanford-Binet, a WISC and a Henmon-Nelson score was available for each pupil (the latter two were converted to comparable Binet IQ's). On the basis of these measures two experimental groups were formed. The High Creativity group consisted of 26 students, 15 boys and 11 girls who had scored in the top 20 per cent of the total group in creativity but not in the top 20 per cent in intelligence. The High Intelligence group included 28 students, 17 boys and 11 girls who had scored in the top 20 per cent in IQ but not in the top 20 per cent in creativity.

The two groups were compared to each other and to the total school population on school performance, teacher preferences on having them in class; n-Achievement as measured by the McClelland stimulus-pictures scored conventionally and rated "blind" for creativity.

Results: The mean IQ of the High Intelligence group was 150.00; of the High Creative group, 127.00; and for the total population including experimentals, 132.00. The school achievement mean for the total population was 49.91; for the High Intelligence group, 55.00; and for the High Creative group, 56.27. There were significant differences in teacher preference ratings, favoring the High Intelligence group. No significant differences were found in the n-Achievement scores. Systematic differentiation of protocols by content-analysis found that the High Creative group was significantly higher in fantasy production categories of stimulus-free theme, unexpected ending, presence of humor, presence of incongruity, and playful attitude toward theme.

Differences between the two groups appeared in both quality and quantity of occupational goals. The quantity of possibilities mentioned was significantly greater for the High Creatives. When the quality of occupations mentioned was categorized as conventional (lawyer, doctor, professor) and unconventional (adventurer, inventor, writer) the High Creative group mentioned a significantly greater proportion of unconventional occupations than did the High Intelligence group (18 per cent of the High Intelligents and 62 per cent of the High Creatives mentioned at least one unconventional occupation as a possibility).

The essence of creativity appears to lie in the ability to produce new forms, to conjoin elements that are customarily thought of as independent or dissimilar; not merely the propensity for seeing the bizarre but rather the aptitude for achieving new meanings having social value. Failure to distinguish between convergent and divergent talent in schools may have serious consequences for society.

Comment: Credit for the pioneering efforts in viewing creativity as the intellectual process of divergent thinking terms and developing instruments for its measurement is due to J. P. Guilford's work. The above study represents one of the first systematic efforts to investigate the characteristics and achievement of youngsters who score high on tests of divergent thinking. Although these tests are measuring intellectual abilities other than those measured by the standard tests of general intelligence and although pupils who score high on such tests of creativity, tend in general to show high academic attainment, it is still uncertain what kinds of intellectual, academic and artistic performance these tests actually predict. There is as yet little evidence to show that outstanding practitioners in areas of creative endeavor in the arts or sciences score consistently high on these instruments or that a high score on these instruments is a sufficient condition for outstanding creative attainment. However, the refinement of these instruments through continuous and varied experimental use should open new areas of talent identification and study. A future longitudinal study such as Terman's, using instruments which assess various aspects of intellectual ability, especially those dealing with divergent thinking - might discover a significant number of gifted individuals who would not be identified were the presently available intelligence tests used as the sole criterion for giftedness.

Torrance, E. Paul, Educational achievement of the highly intelligent and the highly creative: eight partial replications of the Getzels-Jackson study. Research Memorandum, BER 60-18, Minneapolis: University of Minnesota, Bureau of Educational Research, 1960.

Purpose: To provide data on clues to determine when the Getzels-Jackson results are or are not likely to hold.

Subjects: Twenty-five pupils in each of grades 3-6 in a university laboratory school; 128 pupils in grades 4-5 of an elementary school in a small college town; 238 fifth and sixth graders in a metropolitan parochial school; 110 fifth and sixth graders in a metropolitan public school; 272 students in grades 9-12 of a laboratory high school; 70 teachers and counselors in a summer guidance institute; and 85 students in a summer educational psychology class.

Procedures: Data were collected on intelligence and achievement using standardized tests. Creativity scores were obtained on a battery of several tests of divergent thinking. In each of the eight studies the Highly Creative groups consisted of those ranking in the upper 20 per cent of the sample studied on the measures of creative thinking but not ranking in the upper 20 per cent on the measure of intelligence or scholastic aptitude. The Highly Intelligent groups consisted of those ranking in the upper 20 per cent on the measure of intelligence or scholastic aptitude but not in the upper 20 per cent on the measures of creative thinking. Those ranking in the upper 20 per cent on both measures were not considered. The two groups in each situation were then compared on achievement test scores.

Results: In all eight samples significant differences were found in the mean intelligence scores of the highly intelligent and highly creative groups. The amount of overlap between the groups identified by the two kinds of measures as gifted showed that in most groups studied, about 70 per cent of the most creative would have been eliminated if the selection of a "gifted" group were solely on the basis of intelligence test scores (cut-off 135). Two exceptions were one elementary school which used the California Test of Mental Maturity, and in the high school which used the Lorge-Thorndike. In these two schools the highly creative tended more often than in the others also to be the highly intelligent. Coefficients of correlation between creativity scores and intelligence scores computed within each grade of each school tended to be positive but low.

Comparisons of achievement of the highly intelligent and the highly creative were made. Only in the small town and parochial elementary schools where the mean IQs of the high creatives fell considerably below 115 were the mean achievement scores of the high creative groups significantly lower than those of the high IQ groups. In all other schools the differences in achievement were not statistically significant. There was a tendency for the highly creative groups to be better than the high IQ group on reading and language skills, but not on work study and arithmetic skills.

Among the college students the mean achievement scores of the highly intelligent and the highly creative showed no significant differences but the means for the creatives was consistently higher on: Creative Applications, Evaluation, and Self-Initiated Learning; the highly intelligent group had higher means on recognition and recall of subject matter.

Torrance, E. Paul, Explorations in creative thinking in the early school years: VIII IQ and creativity in school achievement. Research Memorandum, 59-11. Minneapolis: University of Minnesota, Bureau of Educational Research, 1959.

Purpose: To determine if creative thinking plays an important role in academic learning among elementary pupils in the fifth and sixth grades.

Subjects: A total of 75 subjects representing all of the pupils in grades four through six (25 per grade) in the University of Minnesota Elementary School.

Procedures: Wechsler Intelligence Scale for Children IQs, Gates Reading Test and Iowa Achievement Battery scores were obtained from school records for the year 1958. An achievement index was derived by dividing achieved grade equivalent by the student's present grade. A battery of creative thinking tests (adapted from Guilford) was administered. These included: uses of common objects, impossibilities, consequences, situations, problems, and improvements. Correlations between achievement quotients, creativity scores and IQ computed separately for each grade and for all grades taken together. Correlations were also computed between creativity and achievement with IQ partialed out.

Results: For the fourth grade all correlations between creativity and achievement were significant and ranged from .52 with Gates Reading to .67 with Iowa Reading. In that grade, the correlation of creativity with IQ was .63. For the fifth grade, all achievement tests but arithmetic were significantly correlated with creativity. The correlation of creativity with IQ in that grade was only .12, not significantly different from zero. For the sixth grade only Iowa Reading Skills tests correlated significantly with creativity. No significant correlation of IQ and creativity was found.

For all grades combined, correlations between creativity and all other measures were significantly different from zero, ranging from .26 with IQ to .53 with Iowa Reading Skills. Correlations between IQ and achievement scores were significant for all subjects in each grade; correlations were highest in fourth grade, lowest in sixth. For all grades combined the range was from .52 for English skills to .63 for work study skills.

With IQ held constant, correlation between achievement and creativity remained significant for Iowa Reading in fourth grade, all subjects but arithmetic in fifth grade, and for Gates Reading and Iowa Reading in sixth grade. For all grades combined significant correlations with creativity were obtained for all subjects. The relationship between creativity and achievement, holding intelligence constant, suggests that creative thinking ability plays an important role in learning, especially in grades five and six.

Roe, Ann, The making of a scientist. New York: Dodd, Mead and Co., 1952.

Purpose: To discover the personality characteristics, early experiences, differences from the general population of three groups of eminent scientists.

Subjects: Sixty-four eminent scientists (20 Biologists, 22 Physical Scientists and 22 Social Scientists), all U.S. born. In each category both theoretical and experimental scientists were included.

Procedures: Personal interviews were conducted with each subject (information on early life, home backgrounds, education, marital status, etc.) Further data were derived from Rorschach, Thematic Apperception Test, and Verbal-Spatial-Mathematical Tests. In addition, all published papers of each subject were used.

Results: Social Description: average marriage age was 27. Divorce percentages: Biologists, 15 per cent; Physical Scientists, 5 per cent; and Social Scientists, 41 per cent. Average age at time of study: Biologists 51.2, Physical Scientists 44.7, and Social Scientists 47.7. Parents of the scientists averaged three children. Scientists themselves averaged two children.

Family Background: Fifty-three per cent of the group had fathers who were professional men as compared with 3 per cent according to the population census in 1910. More first-born or in position where development of personal independence was fostered. Death of one parent during childhood in 32 cases (20 when the child was under 10 years of age; 12 after 10 years of age).

Growing Up: Most of the subjects attended public schools and indicated a liking for it. Physical scientists were preoccupied early with gadgets of all kinds; social scientists with literature and the classics; only five biologists were intensely interested in natural history early in life. Half of the men made their decision to become a scientist in the last two years of college. A significant incidence of early physical problems among the theoretical physicists. Many of the subjects expressed feelings of social isolation.

Intelligence of Scientists: The median score of the subjects on the verbal test was approximately equivalent to an IQ of 166. The lowest and highest scores approximate I.Q.'s of 121 and 177. Genetists and biochemists received higher scores on non-verbal tests than did other biologists. Among the physicists, theorists were higher on the verbal test and experimentalists on the spatial tests. Anthropologists had low mathematical ability.

Thematic Apperception Test: Biologists and physicists avoided intense emotional responses and gave indications of independence from parents. Biologists alone showed persuasive interest in children. Indications of drive for achievement was strikingly lacking in all groups.

Rorschach results: Biologists were the "best integrated". They relied upon rational controls. Physicists showed more anxiety than biologists. Both biologists and physicists were less interested in other people than the social scientists. The group as a whole was more likely than most groups to generalize, to see things in a larger framework, and to look at unusual detail.

Terman, Louis M. Scientists and nonscientists in a group of 800 gifted men. Psychol. Monogr. 1954, 68, No. 7 (Whole No. 378).

Purpose: To study retrospectively the characteristics of 800 male members of a gifted group to determine items which might differentiate those who became scientists from those who did not.

Subjects: 758 male members of the gifted group (selected on the basis of childhood I.Q.s in the top one per cent for their ages) whose careers were followed for 30 years.

Procedures: The educational and vocational records of all subjects were examined and the men classified into eight groups for comparative study: Physical Science Researchers -- PSR (N = 51); Engineers -- E (N = 104); Medical-Biological Researchers -- MB (N = 61); Physical or Biological Majors, Non-Researchers -- PBS (N = 69); Social Scientists -- SS (N = 149); Lawyers -- L (N = 83); Humanities Majors -- H (N = 95); and Non-college Graduates (N = 177). Five hundred items of information obtained for each subject between 1921 and 1951 were recorded on IBM cards and sorted on each variable for the seven groups (Non-college Graduates excluded from evaluation of group differences). The items included ratings and traits from childhood and family background; case history information from the 1928, 1940, and 1950-51 follow-ups and Strong Vocational Interest Test scores.

Results: The MB and PSR groups were the ones with the most favorable home backgrounds; the E and PBS groups, the least favorable backgrounds; the SS, L and H groups were in an intermediate position. Early ability or interest in science was far more common among children who later became physical scientists, engineers or biologists than among those who entered nonscientific fields.

Strong Vocational Interest Tests were scored for six kinds of scientists. The Physical Science Research group was either highest or second highest in frequency of superior scores for all six scientific occupations. The Engineer group was highest or second on three; the Medical-Biological Researchers, highest or second on two. The relative permanence of an individual's interest patterns after the age of high school graduation was confirmed.

There were some 18 variables that yielded significant group differences on matters related directly or indirectly to social adjustment. On a majority of these, the nonscientists made a better showing than did the science group. Data obtained in the 1922 study on interest in play and games, average or parent-teacher composite ratings on social, moral and volitional traits showed the L group highest on all four. The E's were lowest. Data from the 1940 follow-up showed similar results. The L and H groups participated more actively in high school activities. The self-ratings on interest in social life showed groups SS and MB almost equally high and the E group the lowest. From the biographical data completed for the 1950 follow-up the science groups tended to rate significantly lower than the nonscience groups on matters of social adjustment and good personality. On matters of occupational success and life satisfactions, the PSR's scored highest on five of the eight variables. The SS group was lowest on four of the eight.

Compared to the college going men, the non-college men came from less cultured homes, achieved less in school, tested lower in intelligence as adults, and were less successful vocationally.

Final Comment: Several smaller, but highly informative studies of the personal and social characteristics of gifted youngsters have been done since Terman began his monumental efforts in the 1920's. (See, for example: W. Abraham, A hundred gifted children, Understanding the Child, 1957, 26, 116-120; M. R. Sumption, Three hundred gifted children. Yonkers-on-Hudson New York: World Book Company, 1941; P. A. Witty, A study of one hundred gifted children, Lawrence: University of Kansas, 1930.) As a result of this work we know a great deal today about the characteristics of intellectually gifted children. As mentioned earlier, there are some limitations inherent in all these studies but even with these restrictions our picture of the high IQ youngster is fairly complete. However, we have only the beginnings of knowledge of the characteristics of children or youth who would qualify as gifted not on the basis of high I.Q. but on the basis of special talent or outstanding performance on tests of divergent thinking. With some of the new concepts of giftedness, the research in the next decade should provide as much information on various other talents as we now have available on the attributes of the individual of high I.Q.

2. Identification of the Gifted.

The findings from Terman's studies lent support to the value of childhood intelligence for predicting superior adult attainment. School identification procedures now usually involve some assessment of general intellectual ability. The Getzels and Jackson and Torrance studies reported above represent efforts to broaden the concept of giftedness and to include creativity and divergent thinking as additional cognitive variables to be sought in identifying the gifted. The Quincy Youth Development Project and The Gifted Child Project of the Portland Public Schools have defined talent broadly and sought to identify the upper 30 and the upper 10 per cent, respectively, of the intellectually most able pupils plus the most talented in art, music, creative dance, creative writing, creative dramatics, mechanical talent and social leadership. The techniques and procedures employed by the Quincy Youth Development Project are described in Paul H. Bowman, *et. al.*, *Studying children and training counselors in a community program*. *Supp. educ. monogr. No. 78*. Chicago: University of Chicago Press, 1953. Those used in the Portland Project are described in: Portland Public Schools, *The gifted child in Portland*, Portland, Oregon: the Schools, 1959. A discussion of some of the questions involved and cautions to be exercised in detecting gifted pupils is found in Ruth A. Martinson and Leon M. Lessinger, Problems in the identification of intellectually gifted pupils, *J. Except. Child.*, 1960, *26* 227-231, 241.

Pegnato, Carl V. Identifying mentally gifted in junior high schools, *Pittsburgh Schools* 1959, *33*, 215-223.

Purpose: To determine which of the commonly used identification procedures in the junior high schools would be best in selecting pupils for referral to the school psychologist for identification as mentally gifted

(Binet IQ score of 136 or higher.)

Subjects: 1400 students in grades 7-8-9 in a Pittsburgh junior high school.

Procedures: Group was screened for giftedness, using a variety of methods including teacher nomination, group intelligence tests, group achievement tests, honor roll listings, tests of mathematical ability, nominations of students with art or music talent, and membership on student council. The lists from all the methods were combined, analyzed, and 781 students (394 boys and 387 girls) referred for individual intelligence examinations. Of those referred 368 children already had Binet IQs from testing in the elementary schools and 68 had IQs of 136 or above. 413 other students were given individual tests and of them an additional 23 students were identified as having IQs of 136 or above. Thus a total of 91 (55 boys and 36 girls) were identified as intellectually gifted.

The effectiveness (defined by the percentage of gifted children correctly identified) and the efficiency(defined by the ratio between the total number of children referred by a screening device for individual examination and the number of gifted children identified) were then determined for each screening method.

Results: Of the 450 students referred on the basis of scores above 115 on group intelligence tests, 84 were identified as mentally gifted representing 92 per cent of all the intellectually gifted in the school. When a cut-off 130 IQ on group intelligence tests was used, only 21.9 per cent of the gifted were located; at IQ 125, 43.9 per cent were located; at IQ 120, 71.4 per cent were located and at 115, 92.3 per cent were located. The three other major screening methods, teacher selection, group achievement, and honor-roll contributed only five other names (after 190 individual Binet examinations). Screening on special aptitudes failed to locate any of the gifted not previously screened.

The achievement test results above contributed the second largest number of children properly selected as mentally gifted (50). Although three-fourths of the 91 gifted children were on the honor roll 304 other non-gifted children were also on the honor roll. Mathematical aptitude as a screening procedure had high relative efficiency, but almost half of the mentally gifted were not located by that list, and at least twice as many non-gifted were included. A screening procedure based on recognition by peers for political and social leaders had little promise in locating mentally gifted children. Teachers did not locate gifted children effectively or efficiently enough to place much reliance on them for screening. Although group intelligence tests are the most effective (if IQ 115-120 is used as a cut-off point) and the most efficient method of identification, they cannot be relied upon to discriminate among the brighter students because of low ceilings. Besides, some pupils scoring above IQ 130 on such tests, fail to reach this. The second best procedure was group achievement test results followed by honor roll lists and then teacher selection. To find all of the gifted at a school, a combination of procedures should be utilized. Children who do not score high on group intelligence tests but who rate high according to teacher judgment and who show objective evidence of superior achievement should be referred for individual testing.

Comment. The above study defined giftedness as the attainment of a Binet IQ score of 136 or higher. If we assume that this is a valid definition of giftedness, than the study is a valuable analysis of the extent to which other techniques and procedures other than the individual Stanford-Binet contribute to identifying youngsters who meet this criterion. There is, of course, nothing in the study or in the literature to defend this particular cut-off point as the minimal criterion for giftedness. The study is valuable in pointing out the limitations of group intelligence tests, school grades or teacher selection for locating those who would qualify as gifted on the Stanford-Binet and especially for discriminating among the brightest students. However, reliance on a very narrow definition of giftedness restricts the usefulness of the findings for practical school identification programs.

Justman, Joseph. Selecting pupils for placement in special progress classes in junior high school. High Points, 1956, 38, 58-62.

Purpose: To describe the varying results obtained when three different commonly used intelligence tests served as the basis for recommending placement in a special progress class.

Subjects: Five hundred sixty students in 25 sixth grade classes in three New York City elementary schools.

Procedures: The Pintner Intermediate Intelligence Test was administered to the subjects in October 1955; the Henmon-Nelson Test of Mental Ability a month later; and the Otis Quick-Scoring Test, Beta Form, six months later. The results from the Metropolitan Intermediate, administered city-wide, were also available.

Results: Admission to special progress classes is based on an average IQ of 130 or above on two group intelligence tests and a reading achievement of 8.5 or better. The number and percentage of pupils meeting the IQ standard for admission, using the varying results were as follows:

	Number	Per cent
130 IQ on all three tests	21	3.8
130 IQ on Pintner alone	35	6.3
130 IQ on Otis alone	44	7.5
130 IQ on Henmon-Nelson alone	76	13.6
130 IQ average of Pintner and Otis	33	5.9
130 IQ average of Pintner and Henmon-Nelson	37	6.6
130 IQ average of Otis and Henmon-Nelson	51	9.1

Using the results of the Metropolitan Intermediate Test as an additional criterion for selection did not change this pattern. All of the pupils who met the requirement of an average IQ of 130 on two group tests also succeeded in obtaining a reading grade of 8.5 or better, and qualified for admission in this respect as well.

Among the factors contributing to the wide variation in test results are: differences in the abilities tapped by the several tests, differences in standardization groups used in arriving at the norms for the several tests, and differences in the degree to which the several tests are affected by the reading ability of the pupils to whom they are administered.

Comment. Since schools across the country rely on various group intelligence tests as a measure of intellectual ability, it is important to recognize, as this study points out, that the several commonly-used tests do not all measure the same things for the same youngsters in the same way. These differences are present even though most of these tests report comparably high reliabilities and validities. Use of a single group intelligence test for categorizing youngsters as intellectually gifted is a highly suspect procedure, especially as the proportion of youngsters thus identified would vary considerably depending upon the particular test used.

Davis, F.B., Lesser, G.S., French, E.G., and others, Identification and classroom behavior of gifted elementary school children, The gifted student. Washington, D.C.: U.S. Government Printing Office, 1960, pp. 19-32.

Purpose: The study was undertaken to answer the following questions: (1) Are there intellectual abilities independent of, and/or loosely related to verbal reasoning ability in which some children as young as 4½ to 5½ might prove to be outstanding regardless of their verbal-reasoning ability? (2) Can young children who are outstanding in such abilities be identified by means of a suitable test? (3) What differences can be observed in the classroom behavior of first grade children selected as outstanding in at least one of several loosely related intellectual abilities?

Subjects: 263 children who applied for admission to the first grade of the Hunter College Elementary School, in Spring 1958, a special school for gifted children. From this population, 57 were selected for purposes of validating two forms of the identification instrument. Members of the experimental and control groups (26 and 27, respectively) were later selected from the 263 applicants.

Procedures: Information from a series of preliminary Science-Reasoning tests was used to construct two parallel forms of the Hunter Aptitude Scales for Gifted Children. The five scales covered the following areas: Space, Number, Reasoning, Science, Vocabulary. The scales were tested for reliability and intercorrelations computed.

To organize the experimental class, those who scored in the top seven on one of the five scales of the preliminary tests were included if they met the social and emotional maturity requirements of the school's admission policy and if they had not taken the Stanford-Binet prior to the Hunter Tests. The control class was composed of children who met the standard requirements for admission to the Hunter College Elementary School. (Same as above plus 130+ on the Stanford-Binet.) In the Fall of 1958 both the experimental and control classes were tested with the SRA Primary Mental Abilities Test (5-7) and the Hunter Preliminary Tests of Reasoning and Science. The Stanford-Binet was administered to the experimental group.

To compare the effects of instruction in a special area on the children gifted in that area as compared to those gifted in other areas, special instruction related to each of the five mental abilities was provided all pupil in the experimental class. Each child received four times as many training sessions in his own area of giftedness as in the other four areas. At the end of first grade both groups were tested on five specially designed achievement tests one in each area of ability. Observations (two 45 minute periods per week) were coded and analyzed; student participation in the regular class was rated. The PMA (7-11 years) was administered to both classes. Two forms of the Hunter Aptitude Scales for Gifted Children were administered.

Results: The mean IQ of the control group (152.9) exceeded the mean IQ of the experimental group (131.7) by 21.9 points. However, in each of the five areas tested, the special aptitude group in the experimental class exceeded the scores of the higher IQ control group. When the means of the two total classes were compared in each of the five special areas, the differences consistently favored the experimental class, but only in science was the difference statistically significant. As a result of the special instruction, four of the five aptitude groups (all but Science) gained significantly more in their special area than did the rest of the experimental class on the PMA tests. Special instruction in Science was more effective for those gifted in the verbal area than for those gifted in science or number. On the Hunter Scales the gifted groups did significantly better than the experimental class as a whole only in vocabulary and number.

Comments and responses relative to each of the five areas as coded by observers, were more often and more consistently given by those gifted in each area, both during regular class time and during the special instruction sessions. On the basis of the criteria used, the preliminary tests were moderately successful in differentiating among young children of diverse aptitudes.

Comment. In view of the generally accepted belief that there is little differentiation of intellectual abilities in young children, these findings are of particular interest since they demonstrate that even before first grade, children who are outstanding in one or two but not necessarily in all such special abilities as verbal ability, numerical facility, spatial orientation, and logical reasoning can be reliably identified. However, the conclusion that children with outstanding ability in one area will benefit more from special instruction in that area than will pupils whose intellectual strengths are in other abilities is not adequately supported by the data. Even the few significant differences which are reported are open to question since the youngsters with particular strengths in an area received three times as much direct instruction in that area as did the other groups. It must be kept in mind that this is a pilot study and that the number of subjects involved in each of the sub-categories was too small for any conclusive findings.

3. **Achievement motivation and underachievement.**

The fact that intellect and achievement are far from perfectly correlated caused Terman to comment: "To identify the internal and external factors that help or hinder the fruition of exceptional talent, and to measure the extent of their influences, are surely among the major problems of our time." Underachievement in school and college is the most obvious manifestation of the gap between ability and attainment. To date, there have been few experimental studies which attempt to assess the effectiveness of special educational or psychological provisions for underachievers, nor have the childhood antecedents of secondary school underachievement been fully explored. Research into the causes of underachievement and into the means by which the individual can be motivated to realize his potential may help stem the loss of talent.

Shaw, Merville C. and McCuen, John T., The onset of academic underachievement in bright children, J. educ. Psychol., 1960, 51, 103-108.

Purpose: To determine the specific grade level at which academic underachievement can be said to begin and at which the subsequent pattern of achievement may be determined.

Subjects: 144 subjects in grades 11 and 12 were selected. Students in the upper 25 per cent (over 110 IQ) of the school population with regard to ability were classified as achievers or underachievers on the basis of cumulative grade-point averages in grades 9-11. A student whose IQ placed him in the upper 25 per cent and whose grade-point average (GPA) fell below the mean of the class was classified as an "underachiever". A student whose IQ was above 110 and who earned a GPA above the average of his class was classified as an "achiever". Those who fell exactly at the class average (2.40 on a 4 point scale) were not included in the study. Only students who had lived in the same school district for their entire school career were included in the study. The final selection of subjects resulted in four groups: 36 male achievers; 36 male underachievers; 45 female achievers; and 17 female underachievers.

Procedures: Following the selection, the academic record for each student from grades 1 through 11 was studied and grade-point averages at each grade were computed.

Results: Comparison of the male underachievers and achievers showed a significant difference from the third grade on, a difference which increased in significance at each grade level up to grade 10, where it decreased somewhat, but remained significant. A difference in GPA in favor of the achiever group actually existed at grade 1 and became larger at grade 2, but it was not significant under grade 3.

Up to and including the fifth grade, the female underachievers actually exceeded the achievers in GPA, although not at a significant level. At grade 6, the female achievers obtained a higher mean GPA for the first time, and from that point until grade 10, this difference increased every year although it did not reach significance until grade 9. At this point through grade 11 the difference was significant.

The male underachiever appeared predisposed to underachieve academically upon entry into school; his problem becomes steadily more serious until grade 10 at which time it becomes only slightly less serious, due primarily to a drop in GPA on the part of the achiever group. The timing of the drop in GPA (sixth grade) in the female underachiever coincides with the beginning of puberty. It was hypothesized that females do not display their self-directing tendencies to the extent that males do until they approach adolescence. Underachievement in these subjects was not a temporary phenomenon but was rather chronic in nature.

Comments: The findings on early onset of underachievement reported in this contradict findings from Terman's work and from other studies reported in this paper (Goldberg, et. al.). The general consensus seemed to have been that overt underachievement does not become apparent until the end of the Junior High School years. Whereas this study finds many of the pupils achieving far less than expected in the elementary years, it may be that the difference in these findings and those reported in other studies is due to differences in the population sample. Terman dealt with students of IQ of 140 and above; the Goldberg work dealt with students with IQ of 125 and above. It may be that in a population such as the Shaw and McCuen where pupils with IQs as low as 110 are included underachievement is observable earlier. It is possible that for the more highly gifted youngsters, the demands of the elementary school are not sufficiently taxing to make for overt underachievement.

This study, as compared to some of the others, presents an important example of differences in findings that occur due to differences in populations sampled, even when the names given to the populations are the same. For instance, in comparing the findings of Pierce and Bowman with those of other researchers in the area of underachievement, it is important to keep in mind the very large proportion of pupils whom this study identified as "superior." Whereas most other studies have dealt with the top 1 to 10 per cent of the population and have investigated some of the causes and characteristics of underachievement in high ability groups, the Pierce and Bowman study is concerned with the upper third of the total high school population. Just as one must guard against generalizing about the characteristics of the top 20 or 30 per cent of the population from findings such as Terman's, which investigated only the top one per cent, so one must be careful not to particularize from this study, which dealt with the top third of the population to the correlates of underachievement for those whose intelligence places them in the top 1 to 10 per cent.

Barrett, Harry O. An intensive study of thirty-two gifted children. Personnel and Guidance Journal, 1957, 36, 192-194.

Purpose: To determine the causes and patterns of achievement and underachievement among gifted high school students.

Subjects: Each of the Guidance Heads in Toronto's secondary schools chose the one gifted student (IQ 130 or higher) with the lowest and the one with the highest standing on the December 1953 school examinations. Thirty-two students, 16 gifted achieving pupils (9 girls and 7 boys) and 16 gifted underachieving pupils (3 girls and 13 boys) were thus identified.

Procedures: The elementary school records; home background; personality pattern; physical histories; and intelligence, projective and achievement records were studied by the psychiatrist, the psychologist, the school counsellor, the teachers, and the public health nurses.

Results: Examination of the school records, grades, and examinations in the elementary school (grades 5 through 8) indicated that all the 16 achieving high school students were also high achievers in the elementary school. This group was designated as A. Of the 16 underachievers, 8 were achievers in elementary school (designated B_1) and 8 were underachievers at both the elementary and secondary levels (designated B_2). The A group received a total of 232 "superior" ratings in four basic subjects (English, history, geography, and arithmetic) in grades 5 through 8 as compared with 80 such ratings for the B_1 group and 36 for the B_2 group. In the ninth grade, the A group had a teacher grade average of 84.1 per cent with no subjects failed as compared to a 59.5 per cent average and 14 subjects failed for the B_1 group; and 50.9 per cent average with 30 subjects failed for the B_2 group. On a comparison of fifth and eighth grade results, the A group had only four students who dropped below their fifth grade standing; the B_1 group had nine; the B_2 group had ten. On standardized eighth grade achievement tests and on the Differential Aptitude Test Battery at grade 9 the A and B_1 groups differed very little but both differed from the B_2 group.

Ten high achievers, and six low achievers had favorable home patterns on the basis of criteria established by the raters. On the basis of teacher ratings and student interviews the groups showed little difference in self-sufficiency, courtesy, or cooperation.

On the personality ratings made by the psychologists all of the achievers and only one of the underachievers received a "well-integrated" rating. On the average, achievers had stronger feelings of self-worth, more persistence and participated in more leisure time activities. In their reactions to difficulty, all 16 of the achievers and only one underachiever were characterized as trying different possible solutions. On sociometric devices 12 achievers and no underachievers had received ratings of "Considerable Acceptance". Teachers viewed all of the achievers and only two of the underachievers as having Considerable Interest in learning. Twelve of the achievers were listed as Self-Sufficient and four as Dependent compared to 10 underachievers as Self-Sufficient and six as Dependent.

The achievement of individuals within each group varied considerably. For many of the pupils the pattern of achievement was apparent at grade five. Those achieving in grade nine had a record of achievement in the elementary school, but only some of the ninth grade underachievers had poor elementary school achievement records. Underachievers obtained better ratings on standardized tests than on subject examinations, while the achievers obtained better ratings on subject examination. The home patterns of the gifted underachievers were often characterized by neutral or uninterested parental view of education; an over-anxious, over-solicitous, too-easy-going, or inconsistent parental attitude toward the child; family conflict, authoritarianism, or domination by the child. As soon by the classroom teacher, the underachiever exhibited a predominantly negative attitude toward the school. Differences in personality patterns were very great and each individual seemed to be achieving or underachieving for very personal reasons.

Conklin, Agnes M. Failures of highly intelligent pupils. New York: Bureau of Publications, Teachers College, Columbia University, 1940.

Purpose: To study the behavior of highly intelligent students who fail in high school.

Subjects: From 128 high school students with IQs of 130 or higher, two groups were selected: One consisted of 32 boys and 13 girls who were failing in one or more major school subjects and the other consisted of 27 boys and 15 girls of equal intelligence who had not experienced school failure. The IQ range was from 130-163 in each group. The mean of the experimental or unadjusted group was 136.07; the mean for the adjusted or control group was 135.8.

Procedures: Case studies were made of each of the subjects. Physical, psychological, and psychiatric examinations were completed and data gathered on home and family background.

Results: There were no significant differences between the groups in terms of: age at school entrance; number of grades skipped or repeated; preference among school levels; attitude toward schooling; and choice of high school.

The control group participated significantly more often in high school clubs. Term after term, the experimental group maintained average teacher grades of 69 per cent; the control of 81 per cent. In the year and a half in which the data were being gathered for this study, 76 per cent of the unadjusted group and only 5 per cent of the adjusted group were referred to the Student Welfare Committee as "problems".

The groups were found to be alike on many aspects of home and family backgrounds. The parents of almost 70 per cent of both groups were immigrants, having resided in America for about the same length of time. The children of both groups were native born, urban children, 80 per cent of whom has been brought up in New York City. Foreign languages were spoken in homes of both groups to the same extent. There were no differences on the scales which rated material or cultural possessions. The size of family income was the same for both groups. Both groups were identical in their propensity to choose similar places for recreational activities. Both groups engaged in out-of-school time-consuming activities. The experimental group more often devoted its time to paid work; the control group to the study of Hebrew.

The groups were reliably different in number of physical disabilities with the control group exceeding the experimental group in more numerous and more severity of handicaps. The only significant difference between the groups in developmental history was that the members of the experimental had had more unwholesome relationships with their companions and more unsatisfactory relations with their parents. The use of cruel and ineffectual punishment by parents, and unfortunate attitudes toward discipline by the child, were significantly more often found for the experimental group. These unfortunate circumstances probably contributed to the poor school work of the unadjusted group. Psychiatrists working without foreknowledge of how the individuals were classified and through comparatively brief and incomplete examinations, were still able to distinguish the two groups unmistakably.

In general, there was considerable overlapping in the data for the two groups. Three clinicians expressed the judgment that only 35-40 per cent of the psychiatric items and less than 20 per cent of the physical and psychological findings could be dealt with successfully by the schools. The group felt that schools as now organized could not eliminate most of the maladjustments.

Pierce, James V. and Bowman, Paul H., Motivation patterns of superior high school students, *The gifted child*. Washington, D.C.: U. S. Government Printing Office, 1960, *Pp. 33-66*.

Purpose: To differentiate between able high and able low-achieving high school students on a number of non-intellectual variables.

Subjects: 229 subjects (109 twelfth-grade students and 120 tenth-grade students) in the top 30 per cent in intellectual ability who were in the Quincy Public Schools in 1957-58. Subjects were included in the study on basis of scores on any three of seven group intelligence tests. The girls and boys were ranked separately on ability at each grade level.

Procedures: To obtain a student's achievement-ability rank, a weight value was assigned to each course of study and to each letter-grade earned by the students. The grade weights were multiplied by the course weights and the students then ranked separately by grade-level and sex. The grade-course ranks were multiplied by 2 and the ability rank then subtracted to provide an achievement-rank. Students whose achievement-rank placed them below the median for their total group were identified as low-achievers; those above, high achievers. Data were collected on achievement motivation, achievement values, socioeconomic status, adult identification, parent attitudes toward child rearing, psychological inventory, sociometrics, and teacher rating.

Results: On McClelland's n-Achievement, the high achieving boys at tenth and twelfth-grade level scored higher than the low achieving boys. However, among the girls the low-achievers both in tenth and twelfth grade scored higher than the high achievers. When all of the high-achieving boys were compared with all the low-achieving boys on the involvement categories, the ability to become self-engaged in achievement tests, the high-achievers scored significantly higher.

The high-achieving tenth-grade boys scored significantly higher than did the low-achieving 10th grade boys on Strodtbeck's Value Scale (V Scale). However, at the twelfth grade the two groups did not differ significantly from each other, although the scores of the low-achieving boys tended to be somewhat higher. At both the tenth and twelfth grade the high girls scored higher than did the low girls.

Strength of educational motivation was assessed on such factors as peer identification, reading index, educational goals, grades desired, monetary goals, school subjects liked, and identification with adults important to the subject. Student interview measures differentiated in all cases, with high-achieving students scoring higher. All the high-achieving boys and the high 10th grade girls were found to be better adjusted than the lows. The twelfth-grade girls appeared less well adjusted than the lows. High-achieving students scored higher on leadership skills but not on friendship. Low-achieving students in the tenth grade scored significantly higher on aggression and maladjustment. At the twelfth-grade level, the boys in the low-achieving category were seen as more aggressive by their peers. High-achievers reported that they had been more active in school-related activities at the junior high level. They valued school work and imagination more highly than did the low-achievers. High-achievers described the concepts school, self, student, and competition as significantly more positive than did the low achievers.

High-achievers named fathers as having been important influences in their lives significantly more often than did their low-achieving peers. They were more active than the low-achievers in religious activity.

The high-achievers more often came from small families where they were either the first born or only child, and more of their parents attended college; their mothers more often had college aspirations for them, and more often reported that their children engaged in educationally related hobbies.

When comparisons were made on the authoritarian-control factor, the high-achieving girls' mothers were rated significantly higher than the low-achieving girls' mothers, but the mothers of the low-achieving boys were rated significantly higher than the mothers of the high boys, who were significantly higher on the democratic attitudes factor.

Nason, Leslie J., Academic achievement of gifted high school students. Los Angeles: University of Southern California Press, 1958.

Purpose: To study the circumstances and conditions which influence some high school pupils of superior ability to a high level of academic attainment while others of equal ability fail to realize proportionate accomplishment.

Subjects: The group consisted of 237 superior students, (125 girls and 112 boys; 106 tenth graders, 72 eleventh graders; and 59 twelfth graders) selected from three high schools on the basis of an IQ of 125 or above, a Cooperative Reading Test score of 166 or above, and a complete record of grade-point average (GPA). The mean IQ of the group was 126.86. Academic achievement was defined in terms of grade-point averages in all subjects other than physical education. Students with a GPA of 3.00 or less were labelled "low achievers"; those with GPA of 3.75 or higher were considered "high achievers". Twenty-two pairs of boys and 22 pairs of girls matched on IQ but discrepant on school GPA were selected for further study.

Procedures: Data were collected from the following scores: cumulative records, Confidential Data Sheets, personality tests, teacher ratings, and pupil's self-evaluation on a check sheet of information about special abilities, hobbies, likes and dislikes, attitudes toward school and school work, work, future educational and vocational plans, parental attitudes and sources of inspiration to succeed.

Results: Relationship between IQ and GPA for the 237 students was found to be 0.344 for the girls, 0.391 for boys. The group enjoyed all or most things about school and school work and felt that the courses they were taking were good preparation for their futures. Ninety-four per cent of the boys and 90 per cent of the girls planned to go to college.

Although a greater proportion of the "high" boys than of the lows indicated parental expectation of their going to college, and the "high" girls scored higher on school and community relations and social adjustment, no single circumstance or trait was found which would distinguish the individual pupils as to membership in the "high" or "low" achievement group.

However, a pattern of circumstances was found which seemed to be closely related to high-level achievement of superior pupils. The pattern was made up of six circumstances. The pupil associated with the complete pattern of circumstances could be described as one who (1) is satisfactorily adjusted personally and socially, (2) included college in his plans for the future, (3) has a fairly specific vocational choice or plan, (4) indicates that his parents expect him to go to college, (5) feels no parental disagreement with his vocational plans, and (6) senses an inspiration or source of inspiration or encouragement to succeed. Such a pupil was in all cases a high-achiever.

The achievement level of superior pupils was not determined by their relative intelligence within the group. Pupils of both relatively high and low IQs were found in each quintile of achievement. The "high" pupils tended to achieve more satisfactory status with their peers than the "lows". However, peer acceptance did not, consistently predict the achievement level of an individual student. Academic and vocational planning appeared to influence the achievement of superior pupils at all grade levels of the senior high school. Low achievement seemed to be associated with a lack of one or more of the positive circumstances described above rather than with the presence of negative influences. In some cases high achieving pupils faced negative influences as strong as those associated with low achieving pupils.

Comment: Perhaps the most important contribution of this study lies in its attempt to find correlates of underachievement through a pattern of circumstances rather than through a series of independently observed factors. Although the pattern of circumstances may vary from one locality to another and from one group of underachievers to another certainly, methodologically, the attempt to identify a series of interrelated concurrent circumstances may prove to be a sound approach to studying underachievement.

Goldberg, Miriam L., et. al. A three year experimental program at DeWitt Clinton High School to help underachievers. High Points, 1959, 41 5-35.

Purpose: To determine social and personal factors associated with underachievement and to experiment with school procedures which would provide special attention to the problems of underachievers.

Subjects: Students who entered the tenth grade of DeWitt Clinton High School in New York City in 1956-57. One hundred two entering tenth grade boys with IQs of 120 or higher and ninth grade junior high school grade averages below 80, were tested with the California Test of Mental Maturity. Only those whose average score on the CTMM and their previous IQ test or whose score on either test did not fall below 120 were included in this study. On this basis seventy students were identified as underachievers (U). In addition, a group of high ability high achievers (H) were identified. These students had IQs comparable to those of the underachievers, but their ninth grade averages were above 85 per cent. No special provisions were made for this group beyond those normally made by the school for able students.

Procedures: The underachievers were arranged into 35 pairs, matched on IQ and ninth grade average. One student from each pair was assigned to the Special class and the other became part of the Control group. The Controls (unidentified to any of the teachers) were randomly distributed throughout the remaining home room sections.

In the spring of 1956, each of the U's and the H's took the Iowa Tests of Educational Development. Early in the school year a Self-Attitudes Inventory, an Attitude Towards School Inventory, an Academic Aspiration Level Questionnaire, and the Kuder Preference Record were administered to all three groups of students and interviews conducted.

The Special class was assigned to an especially selected teacher as their section officer as well as their social studies teacher. The members of this class were informed that they were part of a group of high ability students who needed to raise the level of their school performance.

Results: At the end of the first year, although slow in improving, the experimental group exceeded the control in almost all subject areas. The following year they remained with their initial teacher for homeroom, but were placed for social studies with a highly qualified but rather rigid woman teacher who was inflexible in her demands for high standards both in work and in behavior. At the end of one semester the group fell well below the controls in all areas, especially in social studies. They became highly supportive of one another in their negative behavior and tested the limits to such an extent that little teaching could go on. Reassignment of the group to an accepting, flexible male teacher for the next year did little to raise the academic level of the group. By graduation, the majority were not accepted by the colleges of their choice; many had dropped out of the academic stream and made no educational plans beyond high school; some few dropped out before graduation. These patterns were no different for the control group. In each, about 10 per cent of the students improved greatly and achieved honor school status. The experimental effects, though apparently significant after one year, showed no carry-over into the upper grades.

The second year, 35 students with IQs above 120 who were failures or near failures in first-year algebra were placed in a special geometry class with a "master" teacher. Here, too, a control group was identified. It was hypothesized that the achievement of success in a major area of failure would result in improved performance in all academic areas. Although about half of the Special group, as compared to about one-fourth of the control group, achieved high scores on an objective geometry test after one semester, they did not show a comparable improvement in other subjects. On the contrary, those who were most outstanding in the math class received lower grades in the other subjects than they had before. When in the second semester, programming problems necessitated a change of teachers, the special group, at the end of the year, showed no differences in teacher grades or in geometry Regents marks from the controls.

Evaluation of the effects of the two approaches revealed that the greatest need of these boys was to be able to identify with a teacher and to have ample opportunity for help with both personal and academic problems. In view of these findings, for the year 1958-59 two groups of underachievers were identified (25 per group) and were programmed for a consecutive daily homeroom and study hour, to be continued for the three years of high school. This arrangement allowed time for individual conferences, help with work study skills, group discussions of common problems, and individual help in specific subject areas. Evaluation of the grades of students in the special classes at the end of one year showed no differences from the grades of the control group. However, a more valid test will come at the end of the three year period. (June 1961).

Twenty-one improvers from the first study were compared with an equal number of non-improvers. The two groups differed significantly with respect to the Iowa Tests of Educational Development composite and correctness of writing scores (the improvers were higher) and on self-attitudes inventory (non-improvers showed a greater discrepancy between their perception of abilities and their wished-for abilities status). The large discrepancy suggests that non-improvers see their ability to perform in various areas as too far from what they would like it to be to warrant making an effort to improve. There were differences in other areas as well but these did not reach statistical significance. For example, the incidence of divorces was greater among the parents of the non-improvers; fewer had reached a decision on vocational goals and, where they did state a preference, it was less often above the level of their father's present occupation; fewer were only or oldest children; fewer had older siblings in college who could act as achievement models for them.

Comment: This study represents one of the few attempts reported in the literature to modify the academic behavior of the underachiever through school efforts. The negative results reported here as well as those of other researchers who attempted to provide special counselling or guidance services to such groups suggest that as yet, there is little concrete help that research can give schools in planning special provisions for the underachiever. (See, for example, M.H. Ohlsen and F.C. Proff, "The extent to which group counselling improves the academic and personal adjustment of underachieving gifted adolescents," mimeographed report, College of Education, University of Illinois; and Talent Preservation Project, "Interim Report," mimeographed report, Columbia University School of Engineering, 1959.)

It well may be that such efforts as those described in this study as well as other attempts at guidance and therapy are effective in re-directing the self-concepts and attitudes of the underachiever, but that the period in which these services are provided is too short to allow for such changes to be reflected in improved grades. What is needed in this area is a longitudinal study following up those students who received various kinds of special assistance to see whether and which kinds of assistance resulted in later improvement in academic behavior and attitudes.

Shaw, Merville C. and Brown, Donald J., Scholastic underachievement of bright college students, Personnel and Guidance, 1957, 36, 195-199.

Purpose: To isolate specific personal characteristics of high ability underachievers.

Subjects: An experimental group of 28 students with a grade point average for their college freshman year below the mean of the freshman class as a whole. A control group of 30 students who had a freshman grade point average in the upper quartile. Both groups were in the 75th percentile on the ACE test. The two groups were essentially similar on the basis of age, length of time spent in school and academic aptitude.

Procedures: The two groups were compared on the basis of the academic and psychological instruments and on social criteria such as place of birth, number of children in the family, parental education, size of home town, and religious affiliation.

Results: There were no significant differences between the two groups on the Cooperative Achievement Tests. There was a significant difference between the groups with regard to the number of units earned in high school. Three-fourths of the control group carried a heavier than normal high school load while less than half of the underachievers carried more than the usual number of units. More than twice as many underachievers as achievers carried a smaller than normal academic load.

There were no significant differences on the four categories of the Bell Adjustment Inventory: home, health, social, and emotional. There were no significant differences between the groups on the six scales on the Study of Values. On the Bell Preference Inventory the underachievers showed significantly higher scores on attitude of hostility or hypercriticalness with respect to people, and displayed a tendency to feel deprived of the material things that they would have liked from life when living with their parents. Achievers tend to come from areas of greater population than underachievers.

There was a tendency for parents of achievers to have more education than parents of underachievers. Underachievers (who did not differ from the achievers on standardized achievement tests) seemed to have absorbed as much general information as did their achieving intellectual peers. The underachievers appeared to be learning but their high school teachers and college instructors did not recognize or measure this achievement. Underachievement in college is not a phenomenon that starts with college, but is a situation characteristic of most of these students throughout their high school careers. It appears that underachievement of bright students is related to the basic personality matrix of the individual. One of these personality characteristics may be a hostility toward others, possibly toward authority in particular. Observation of such students in counselling situations indicated that this attitude may be an unconscious one and might take a masochistic form. Underachievement is closely related to the family and social milieu in which the individual has grown.

Tannenbaum, Abraham J., Adolescent attitudes toward academic brilliance. Unpublished doctoral dissertation, Teachers College, Columbia University, 1960.

Purpose: To ascertain whether or not reactional differences of adolescents toward academic brilliance were stimulated by ability characteristics or other personal attributes.

Subjects: 615 eleventh graders in a New York City comprehensive high school.

Procedure: Subjects were asked to respond to written descriptions of stereotyped students. Three dichotomized characteristics (brilliant-average, studious-nonstudious, and athletic-nonathletic) appeared in eight possible combinations in sentences describing the stimulus characters. The subjects than indicated for each of 54 traits whether or not it typified each of the eight stimulus characters.

Results: The students ranked the characters in the following order of desirability:

Brilliant-Nonstudious Athlete
Average-Nonstudious Athlete
Average-Studious Athlete
Brilliant-Studious Athlete
Brilliant-Nonstudious Athlete
Average-Nonstudious Nonathlete
Average-Studious NonAthlete
Brilliant-Studious NonAthlete

Of the four possible comparisons between students described as average and those described as brilliant who were alike on studiousness and sports-mindedness, the only significant difference was between the Average and the Brilliant Non-Studious Athlete, favoring the Average character. The mean ratings for the four Average characters did not differ from those for the four Brilliant characters. Both the Brilliant-Athletes and the Brilliant Non-Athletes were rated significantly higher when they were described as non-studious, as when they were described as studious. In every case the Athletes rated significantly higher than the NonAthletes. There was no significant linear relationship between the intelligence and parental education status of the respondents and their ratings of the various characters.

Insofar as verbal stereotypes reflect face-to-face relations, these results suggest that academic brilliance *per se*, as compared to average ability, is not a stigma among adolescents, but when combined with relatively unacceptable attributes such as studiousness or non-athleticism, it can penalize its possessor. The NonStudious Athlete may demonstrate outstanding brainpower without fearing social derogation by peers. However, a display of brilliance by one who is studious and indifferent to sports constitutes a definite status risk.

Educators should consider the possible effects of these adolescent values upon the gifted youth's desire to excel. The brilliant student may be an exceptionally prominent target for teenage pressures to conform to certain behaviors and values. If so, there is danger of his deliberately masking his talent in order to relieve these pressures.

Comment: The above study highlights the importance of considering the attitudes of adolescents towards outstanding academic or creative achievers in present school efforts to raise scholastic standards and to foster the "pursuit of excellence." These findings are supported by Coleman's research (J. S. Coleman, *The adolescent society*. Glencoe, Ill.: The Free Press, 1961) which found that high academic attainment is far from first in determining the adolescent's status in the peer culture of the American high school. The Coleman research found this situation to be true even in college-oriented suburban school situations. A. Wilson found that the lower class school was more detrimental to outstanding achievement and college aspirations among intellectually talented students than the middle class school even when the students came from professional and middle-class family backgrounds. (See A. B. Wilson, Residential segregation of social classes and aspirations of high school boys. *Amer. soc. Rev.*, 1959, *24*, 836-845.) To what extent the negative attitudes toward academic excellence will be modified by societal demands for more people in professional and academic pursuits is not yet clear.

Wilson, Allen B., "Residential segregation of social classes and aspirations of high school boys". Amer. Socio. Rev., 1959, 24, 836-845.

Purpose: To compare the aspirations of high school students with similar social origins who attend schools characterized by different climates in order to determine the effects of the normative reference on such educational aspirations. Specifically, the question investigated was: are the sons of manual workers more likely to adhere to middle-class values and have high educational aspirations if they attend a predominantly middle-class school, and conversely, are the aspirations of sons of professionals more modest if they attend a predominantly working-class school?

Subjects: 1355 boys in 13 high schools in and around the San Francisco-Oakland Bay area. The schools were grouped on the basis of predominant educational and occupational stratification obtained from census data. Group A schools contained 418 boys from the upper white collar strata in which over half of the fathers and mothers were college graduates, and two thirds were in the professions or white collar jobs. Group B schools had 480 boys with about one third of the parents college graduates; and about an equal number in professional and white collar jobs. Group C schools contained 457 boys with only 14 per cent of the fathers and 12 per cent of the mothers with some college work. Only about a quarter of the fathers were either professional or white collar workers.

Procedures: Data on academic aspirations, academic achievement, environmental characteristics, and student interests were collected and compared.

Results: Eighty per cent of the students in the A group aspired to a college education; 57 per cent in Group B and only 38 per cent in Group C wanted to go to college. While 93 per cent of the sons of professionals in Group A wanted to go to college, less than two-thirds of the sons of professionals in the Group C schools wanted to go to college. One-third of the sons of manual workers wanted to go to college if they attended a preliminary working class school and more than one-half wanted to go to college if they attended the middle-class schools.

In order to control for differences of parental attitudes within each of the broad occupational strata, the occupational groups were broken down into sub-categories in terms of education and employment. The students were then compared within these more homogeneous background categories which were assumed to be also somewhat more homogeneous with respect to uncontrolled attitudinal dimensions. There was little change in the students' aspirations. Three-fourths of the children of self-employed artisans and skilled manual workers aspired to go to college at the A schools, while considerably fewer than one-half of them did so at the C schools.

When mean academic achievement was used as the basis of comparison, the proportion of students aspiring to go on to college within each grading category varied as follows: (1) Median academic grade of "A", 98 per cent at A schools, 96 per cent at B schools and 78 per cent at C schools aspired to go to college; (2) median academic grade of "B", 90 per cent at A schools, 89 per cent at B schools and 72 per cent at C schools; (3) median academic grade of "C", 72 per cent at A schools, 55 per cent at B schools and 41 per cent at C schools; and (4) median grade of "D", 43 per cent at A schools 21 per cent at B schools, and 25 per cent at C schools.

High achievers were less likely to wish to go to college if they attended a working-class school and, conversely, low achievers were more apt to want to go to college if they attended middle-class schools. The de facto segregation brought about by concentrations of social classes in cities results in schools with unequal moral climate which affects the motivation of the child, not necessarily by inculcating a sense of inferiority, but by providing a different ethos in which to perceive value.

Final Comment: Despite the extensive literature in the area of motivation of gifted students -- some bibliographies include as many as several hundred titles -- variance in achievement among intellectually gifted students is far from fully understood. It can be stated as a fact that many students of high I.Q. and/or aptitude as measured by standardized tests do poorly in school. Sometimes this poor performance is apparent as early as the elementary school; in most instances, however, it becomes marked during the secondary school years (especially for the high I.Q. groups). To what extent this phenomenon is a result of the limited predictive validity of existing aptitude and intelligence measures for actual academic performance; to what extent it can be explained in terms of social factors which influence the attitudes of some gifted students; or to what extent individual and personality factors are at the root of the problem is as yet far from clear. Certainly the few reported efforts in assisting gifted underachievers either through school programs, counselling or group therapy have not found these methods effective in raising academic performance.

4. Educational Programs

Over the years, many different plans and program modifications have been used by schools for educating the gifted. Research has focused on studying the effects of specific administrative arrangements such as various kinds of special grouping or acceleration. From these studies, the advantages and disadvantages of such arrangements have emerged but "no single adaptation has yet provided the conclusive method for providing adequately for all kinds and degrees of giftedness." The educational process by which talent potential is best transformed to talented performance still presents problems for research.

Gallagher, J.J. and Crowder, T., The adjustment of gifted children in the regular classroom, Except. Child., 1957, 23, 306-312, 353-363, 396-398.

Purpose: To discover the extent to which highly intelligent children have difficulty adjusting to a regular classroom situation academically, intellectually, socially, and emotionally.

Subjects: Thirty-five students (20 boys and 15 girls) in grades two through five in a midwestern city with a highly favorable social, economic and educational level. About half of the fathers were college professors or connected in some academic capacity with a university; 11 per cent were skilled or semi-skilled workers; 34 per cent had professional backgrounds or were in business. Over half of the mothers finished college and over three fourths had attended college. There were no histories of divorce in any of the subjects' families. The subjects had Stanford-Binet IQs of 150 or better.

Procedures: Intelligence and achievement tests were administered and data gathered on Rorschach tests, teacher ratings, and sociometrics. Total data on each child was evaluated and areas identified where the child was not developing to the limit of his potential.

Results: The children tended to score higher on WISC verbal than on performance subtests. The median for the verbal was 143, performance, 138; and full scale, 144. The median reading, social studies, and Science on the Stanford Achievement tests and Intermediate and Advanced Battery for the 23 children in the intermediate grades were more than four grades above placement. Only in one or two subjects were scores as low as grade level; the median arithmetic computation score was only .7 grade units above grade placement. Thirty-three of 34 children obtained higher arithmetic reasoning than arithmetic computational scores. The performance of the 12 children in grade 2 and lower 3 who took the elementary battery showed less deviation between achievement and grade placement. The median gain over grade level was between one and two grade units for each subject.

On the sociometrics, over half of the gifted group ranked in the top quartile in social popularity. Over 80 per cent of the group was above the median for their class in the number of choices received and only two pupils fell in the bottom quartile. On the Rorschach, as rated by 2 judges of high interjudge reliability five cases were ranked as having marked disturbance, while 30 of the cases were rated as producing a predominantly healthy record. The same results held for the characteristics of anxiety and hostility.

In contrast to the other findings, the judges were not positively impressed with the creative aspects of the records. Only seven cases were rated as showing good creativity; 11 cases yielded some creative responses; and 17 revealed no originality or creativity in their records. Corroborating these data, the teachers rated only nine cases as spontaneously developing new ideas and 11 as not having creative work as a strong point. Ten of the children were rated as being the leaders and another 18 placed as potential leaders although they might have been personally disinclined to leadership. Seven seldom or rarely attempted leadership roles.

Of the 16 primary children 7 were rated as having "no outstanding problems"; while only 3 of the 19 intermediate grade children were so classified. Nine of the 19 in the intermediate group were identified as showing intellectual inflexibility as compared to 1 of the 16 in the younger group. Seven children in each of the groups were rated as having problems of motivation.

Social adjustment turned out to be less of a problem than other areas of adjustment. Even where social adjustment problems were present, these did not seem to relate to intellectual status. It seemed possible that some children were deliberately restricting their intellectual activity in order to insure their social status.

Goldberg, Miriam L., Justman, Joseph, Passow, A. Harry and Hage, Jerald, The effects of ability grouping: a comparative study of broad, medium and narrow-range classes in the elementary school. Horace Mann-Lincoln Institute Interim Report. New York: Teachers College, Columbia University. 1961.

Purpose: To explore the differences in achievement and learning patterns, social and personal relations, motivational structure, and attitudes toward self and toward school of intermediate grade children when grouped in classes with various ranges of intellectual ability. To test the hypothesis: Neither the range of abilities in any given classroom nor the relative position of a particular ability level within the range nor the presence or absence of gifted pupils will affect the attainments of elementary school pupils. Data on attainment of social and personal development as well as teacher ratings are presently being analyzed. These will be reported later.

Subjects: Three thousand fifth-grade pupils in 45 elementary schools were classified according to five IQ levels, varying from low-average to gifted; 86 classes were organized on the basis of 15 ability-grouping patterns, some of which were narrow (one or two ability levels), some medium (three ability levels), and others broad-range (four or five ability levels).

Procedures: The classes remained intact for two years. The pupils were tested at the beginning of the fifth and at the end of the sixth grade. Measurements were taken of academic achievement, interests, self-appraisal, attitudes toward school, friendship and leadership status, attitudes toward more (or less) endowed peers, and creative writing. In addition, each pupil was rated by both his fifth-and sixth-grade teacher on a variety of traits. No attempt was made to influence or modify instruction in any way; the study involved administrative groupings only.

Results: Achievement tests provided measures in nine areas, including reading, language, arithmetic, social studies, science, and work-study skills. On all but the science, social studies, and arithmetic computation tests, the increments in achievement were seriously limited for the higher ability students by the test ceilings. For all five ability levels taken together, achievement increments in social studies, reading, vocabulary and the three areas of arithmetic were significantly greater in the broad-range than in the medium and narrow-range classes. However, the differences were generally small and for no one group were they significant in more than two or three of the subjects tested. In general, if the data for the five ability levels are considered as a whole, the indications are that the broad-range patterns (four or five ability levels) show the largest mean increments in achievement, followed by the narrow-range patterns (one or two ability levels). The smallest increments were observed in the medium-range (three ability level) groups.

A class by class analysis of the relationships among achievement increments in various subjects indicated that for any class (for each ability level) high achievement in one area was not necessarily accompanied by comparably high achievement in others. These findings suggest that teachers tended to emphasize one or two subjects because these represented either their own strengths or perceived student weaknesses.

On the other hand, success of one ability level (within each subject) tended to be significantly correlated with success of other ability levels in the classroom. This finding held most often for reading, language usage, and arithmetic; it held least often for science. In general, teachers seemed to be more successful in handling several ability levels simultaneously in any one subject than they were in treating several subjects with equally satisfactory results.

For the three intermediate ability levels (IQ 100-129), being at the top, in the middle, or at the bottom of the ability range in a classroom had no significant effect on achievement.

The presence of gifted students (IQ 130 or above) in the classroom, regardless of the ability range of the class, affected the achievement of the other ability levels in science and, to a lesser extent, in social studies. Where there were gifted students, the other ability levels scored higher in these two subject areas than in classes of equal range where the gifted were absent. Conversely, the presence of the low-average tended to have a positive effect on the arithmetic computation scores of the other ability levels. These findings may shed some light on the general superior attainments of all ability levels in the broad-range classes.

Interest scores in all areas tested tended to go down for all ability levels. However, for the gifted, the narrow-range ability groups reversed this tendency in some interest areas. There was no significant relationship found between interest and IQ or between interest and achievement in a given subject.

Comment. On a large scale this study supports the finds of many earlier studies that ability grouping per se does not make a difference in the school achievement and adjustment of either gifted or non-gifted children. However, an important limitation of this study as well as of many others lies in the sole use of standardized achievement tests to assess academic attainment. For this reason learnings which are not measured by standardized achievement tests but which may be of great significance to the intellectual development of the students remain unassessed. One cannot conclude that ability grouping may not have effects on achievement which do not show up on standardized instruments.

The findings that for any one class success in one subject did not necessarily imply comparable success in another subject was especially true for the gifted pupils. This finding raises questions about the ability of any one teacher to provide adequate instruction for gifted children across all the elementary subject areas.

Mann, Horace, How real are friendships of gifted and typical children in a program of partial segregation. *Except. child.* 1957, *23*, 199-201, 206.

Purpose: To examine the contention that gifted children in a partial segregation program have opportunity to develop and maintain friendships with typical children in their regular classrooms.

Subjects: The 281 subjects were students in the grades 4-6 in the Pittsburgh, Pa., Colfax School. Children with Binet IQ's of 130 or more spend half their school day in regular classrooms with typical children and the remainder in workshops with gifted children only doing enrichment work.

Procedures: The first sociometric was given to 281 children including 67 gifted children in the intermediate and senior workshops. The intermediate workshop group consisted of 31 gifted children from the fourth and the lower half of the fifth grades. The senior workshop consisted of 36 gifted pupils drawn from the sixth and upper half of the fifth grade. The instrument was designed to measure the social position gifted children held among gifted as well as typical classmates. Three acceptance-oriented and three rejection-oriented questions were asked.

A second sociometric was designed to examine the choices of gifted children in the regular classroom and workshops. Two acceptance-oriented and two rejection-oriented questions were asked of the 67 gifted children only. A questionnaire was sent to their parents asking which children the gifted child chose to invite to his home, which he invited to stay overnight, which he invited to help him on studies, and which he called upon when he wanted someone with whom to play. This questionnaire also asked parents to identify the meeting place of out-of-school friends. A 93 per cent return was received on the questionnaire.

Results: On the first sociometric gifted children in the intermediate workshop chose other gifted children 181 times more than typical children. The gifted children in the senior workshop chose other gifted children 124 times more than typical children. Typical children from the intermediate regular classes chose other typical children 524 times more often than gifted children. In the senior regular classes they chose other typical children 806 times more than gifted children.

Gifted children in the intermediate workshop rejected other gifted children 153 times more than typical children. In the senior workshop the gifted children rejected other gifted children 102 times more than typical children. Typical children rejected other typical children 607 times more than gifted children in the intermediate regular class. In the senior regular classes typical children rejected other typical children 921 times more than gifted children.

The second sociometric showed that in the intermediate workshop gifted children preferred other gifted children to criticize their work in music and art 71 per cent of the time; in the senior workshop they preferred gifted children to criticize this work 65 per cent of the time. When the acceptance choices of workshop children on the first sociometric were compared with the children listed by the parents as their child's most chosen associate in each of the three situations, a correlation of +.42 was found for intermediate workshop children and +.39 for senior workshop children. For recreation purposes, the gifted children selected children in the neighborhood 51.79 per cent of the time. For purposes of study, the gifted children selected from within the workshop 87.64 per cent of the time as compared with 1.81 per cent of the time from the typical classroom children, 5.99 per cent from the neighborhood, and 4.56 per cent from within the family. When inviting children to their homes, the gifted children selected from within the workshop children 44.20 per cent of the time.

There was a substantial relationship between the friends the gifted children had in school and those they had in the community. The higher the school acceptance score the more frequent the mention of the child's name on the parent questionnaire. The workshop provided the most frequent locale for meeting the friends gifted children made. While the workshop, the room in which gifted children work together, helped to develop and reinforce friendships in-and-out-of-school, the regular class, which provided a place where gifted and typical children mingled did not actually produce relationships significant enough to be classified as friendships.

Comment. The above findings must be considered in view of the fact that the sociometric instruments were administered while the youngsters were in their separate special programs. Had the friendship choices been made at the time when the average and gifted children were together, both the acceptance and rejection patterns may have been different since proximity exerts a significant influence on such choices.

Justman, Joseph, A Comparison of the functioning of intellectually gifted pupils enrolled in special progress and normal progress classes in junior high schools, New York: Board of Education of the City of New York, Bureau of Educational Research, 1952. Mimeographed.

Purpose: To appraise the comparative functioning of intellectually gifted pupils drawn from Special Progress (SP) classes in which the three years of junior high school are completed in two years with that of gifted from Normal Progress (NP) classes.

Subjects: Eighty-three pairs of students matched on school attended, grade, sex, mental age, chronological age and IQ, were drawn from the seventh grade entering NP and SP classes. All subjects met the criteria for admission to the SP program: IQ of 130 or higher on two group tests, reading level of 8.0, Arithmetic level 8.0, good health, and minimum age of 11.

Procedures: All subjects were evaluated on a variety of achievement, attitude, interest and social adjustment instruments near the beginning of seventh grade and again 14 school months later. Achievement test results were treated in two ways: (1) comparison of results on total tests; (2) comparison of results only on those items which were related to the seventh and eighth grade courses of study. All items dealing with ninth grade content were eliminated.

Results: There were no significant differences in increments in Reading Skills or Arithmetic Computation between SP and NP students. However, as a group, the SP's were initially higher on reading. The SP group made significantly greater gains in Mathematics, Science, Social Studies and Work Study Skills when compared on the total tests. When the groups were equated on reading and only seventh and eighth grade items considered, the superiority of the SP group remained significant in some aspects of Mathematics, in Work Study Skills and in Science. Differences in Social Studies became minor and non-significant.

A test of personality yielded no consistent differences between the groups. The three sociometric techniques utilized yielded conflicting results. On the Friendship Nominations and the Modified Ohio Social Acceptance Scale SP classes showed better social adjustment than their matched pairs. The reverse was true on the Casting Characters test. There was no conclusive indication of differences in personal and social adjustment.

On none of the interest measures did the two groups differ significantly. Intellectually gifted pupils in SP classes generally showed academic achievement superior to that normally attained by equally gifted pupils who remained in NP groups with no loss in attitude toward school or social- personal adjustment.

Comment. The significant implication of the Justman study is that, despite the years difference in chronological age, the accelerated pupils did at least as well in most areas of academic and personal adjustment as those pupils who had spent the full three years in junior high schools. In addition to having done as well as their older classmates on the material of the seventh and eighth grade, the accelerants managed to cover a considerable amount of the material for the following (ninth) year. This study stresses the importance of acceleration in this area as usually measured by standardized achievement tests.

Abramson, David. The effectiveness of grouping for students of high quality. Educ. res. bull., 1959, 38, 169-182.

Purpose: To investigate the relationship between the grouping of high school pupils on the basis of ability and their subsequent progress in college.

Subjects: The subjects were drawn from a sample of 318 students who were graduates of four New York City high schools which practiced different kinds of grouping. School A grouped high-ability pupils heterogeneously with other pupils from all levels of ability. School B selected high-ability students for honor classes in one or two major subjects only. School C grouped high-ability pupils in an honor school so that they were in special honor classes for most of their major classes. School D selected only high-ability pupils for admission on the basis of a special examination. Each sample consisted of 16 students (8 males and 8 females) drawn from each of the three levels of intelligence: Level 1, IQ 115-124; Level 2, IQ 125-134; and Level 3, IQ 135-160. The total of 192 students were equally distributed (each sex and intelligence level) between New York City municipal and other colleges.

Procedures: Students were compared on subsequent academic achievement through the sophomore year of college. Overall grade-point averages, honors, and grades in specific courses were used as criteria of achievement. The comparisons were made for each criterion for both the total group and for those attending the New York City municipal colleges.

Results: There were no statistically significant differences in the grade-point averages earned by students who had been members of ability groups and those who had not. Variations in the extent to which ability grouping had been employed failed to produce any significant differences in the tests applied to each year of college work or to the grade-point averages for the combined two years for either the total or municipal college group.

When the grade-point averages were considered according to the three levels of intelligence and without regard to the particular high school attended, statistically significant differences were obtained in five of the six tests which were applied. In four instances, Level 3 students were superior to those of Levels 1 and 2, while in the fifth instance they exceeded significantly only Level 1 students. Women attained grade-point averages significantly superior to those of men in the total group but not in the municipal college group. Consideration of the possible effect of the interactions of the variables of sex, school, and level of intelligence produced consistently negative results. No evidence was found to support the possibility that any significant effects could be attributed to the working together of any two or more of the three main variables.

There was no significant difference of any kind in either the number of honors won or in the number of students who won them among the specific high schools which had used the several methods of grouping. No differences in honors were observed between men and women, but the level-of-intelligence categories showed statistically significant differences in honors won. In no specific subject were the effects of school or sex significant. The effects of level-of-intelligence, however, were significant in two of the eight testing situations.

College freshman and sophomore grade-point averages, honors, and course grades were not influenced by patterns of high school ability grouping. The overall achievement of students, as judged by grade-point averages and honors seemed to be associated with level of intelligence rather than with the grouping patterns used in the particular high school attended.

Comment. Caution must be exercised in generalizing from this study. The limited sample and the lack of comparability in college curricula raise certain questions. The chief issue, however, is the criterion problem: whether college grades are an adequate measure of the effectiveness of various kinds of high school programs. To this criterion problem must be added the fact that even though the differences in grade point averages earned by the students in the various groupings were not statistically significant, in all comparisons they followed the same direction (highest for the specialized school, the lowest for the ungrouped situation). The consistence of the direction suggests that factors other than chance may be operating in the effects of the various grouping arrangements.

Hobson, James R. Scholastic standing and activity participation of underage high school pupils originally admitted to kindergarten on the basis of physical and psychological examinations. Presidential address presented to American Psychological Association, Division 16, September, 1956. Mimeographed.

Purpose: To compare scholastic performance in high school, participation in school activities and college admissions success of underage children originally admitted to kindergarten by test, with the performance of others who graduated in their class.

Subjects: 550 high school graduates 1946-1955 who were originally admitted to school underage and 3,891 others who had been admitted at the regular age.

Procedures: The two groups were compared on numbers who graduated with honors and election to an honor society based on both participation and prominence in extracurricular activities as well as scholarship. A more detailed study of the classes of 1946 and 1947 included a comparison of high school scholastic performance of 94 underage children with 764 others as to marks and average rank in class; extracurricular activities for the four year period including a frequency distribution and informal analysis of these activities; and percentages of college admissions with an appraisal of the colleges to which admission was gained.

Results: Both the underage boys and girls exceeded their older controls in the percentage who graduated with honor in each one of the 10 years, usually by a large margin. One fourth of the underage girls graduated with honor. For both sexes combined, 22.7 per cent of the underage students as compared to 11.9 per cent of the older group graduated with honors. For the

10 year period the percentage of the underage group admitted to Alpha Pi honor society was twice that of the other students. The four-year academic point ratings of the underage group in the class of 1946 was 2.49 compared with an average of 2.10 for the other children. The average rank in class for the underage boys in the class of 1946 was 167 (out of 387) and 219 for the other boys.

The scholastic superiority in elementary school of underage children, originally admitted on the basis of physical and psychological examinations, over their classmates continued and was somewhat increased through the high school years. Underage accelerates engaged in a significantly larger number of extracurricular activities over the four year period than did their classmates of the same sex. In the matter of honors, awards, and distinctions at graduation, the underage boys and girls exceeded their fellows by a ratio of about two to one. A significantly larger percentage of underage graduates sought and gained admission to accredited four year colleges of superior standing than was true of their classmates of the same sex.

Keys, Noel. The Oakland Study. The underage student in high school and college. Berkeley: University of California Press, 1938. Pp. 229-255.

Purpose: To compare the adjustment in senior high school of bright pupils markedly below average age with that of students of like ability and social background but of normal age.

Subjects: Four groups of students were selected: an Experimental Group of 46 students with IQs of 120-137, graduating at 16 years-8 months or younger; matched for IQ, sex, race and socio-economic status with a Control Group of 46 students, graduating at 17 years-6 months or older. The mean age of the Control Group was 19 months above that of the Experimental. In addition a high IQ Group consisting of 24 accelerates with IQs of 136-151, too high to permit matching with controls, and a Low IQ Group (93-119) consisting of 43 pupils accelerated from two to five semesters were also studied.

Procedures: The students were compared on activities, honors, student offices, rating by school counselors, scores on the Bernreuter Personality Inventory, and questionnaire responses covering opinions and personal adjustments.

Results: The mean high school grade-point average for the Experimental Group was 3.15; for the Control, 3.07; for the Highs, 3.64; and for the Lows, 2.84. The differences between the High and Low groups and between the Experimental and Control groups were significant. In the percentage of the groups receiving honors and prizes, the Highs led with 63 per cent; the Experimentals, 61 per cent; Controls, 50 per cent; and the Lows, 28 per cent. The difference between the Highs and Lows was statistically significant.

The younger boys had no disadvantage in athletics. The Experimental Group had four times as many boys on the football team as the Control Group. While the difference was not significant, the Experimental girls also exceeded the Controls. Eighty-four per cent of the High IQs participated in one or more extracurricular activities as compared with 72 per cent of the Experimental Group, 61 per cent of the Controls and 65 per cent of the Low IQs.

There were no significant differences among the groups with respect to physical health. Without knowledge of groupings, counselors rated the High IQ students slightly lower on personality than the Control students, although the difference was not significant. More than twice as many Control students were rated "timid," "shy," and "reserved" by counselors as were Experimental students. Data from the Bernreuter Personality Inventory indicated that the Neurotic Tendency mean for the Experimental Group was 49.9 as compared with 54.1 for the Controls, 51.4 for the High IQs and 45.7 for the Low IQ Group. The differences between the Experimental and Control Groups and between the High and Low Groups were significant. The difference between the Experimental and Control Groups on the Sociability Scale was not significant. The Highs scored significantly higher on Sociability than the Lows.

The study suggests that acceleration, far from making for maladjustment, may actually be helpful to the social relations of the bright. To judge from the age of companions preferred, 78 per cent of the accelerated boys and girls were appropriately placed in high school as against 55 per cent of the normal age boys and girls.

Comment. The Keys study was one of the first attempts to compare the adjustment and achievement of accelerated high school pupils to the academic and social adjustment of an equally able group of non-accelerants. Although the sample was relatively small, the differences between groups were sufficiently great to reach statistical significance.

The Fund for the Advancement of Education. They went to college early. New York: The Fund, 1957.

Purpose: To study the results of early admission to college in selected universities.

Subjects: The subjects were 860 college students who were admitted to 12 different colleges or universities before completion of high school and who were approximately two years younger than the average college freshman at the time of admission. A carefully selected group of Comparison students, matched with the early admittees on academic aptitude, were included as a control group. A total of 1,350 Scholars were admitted between 1951-1954 but the report focused primarily on the 660 graduates admitted in 1951-1952.

Procedures: Each of the 12 colleges kept detailed records on the Scholars (early admittees) and the Comparison students. A 34-item questionnaire with information about family and school backgrounds, experiences in college, and plans for the future was completed by the students. Each of the participating colleges reported on its own experience with the program. An appraisal of the social and emotional adjustment of the 1951 Scholars was made by a team of trained psychiatrists. An analysis was made of essays written just before graduation by the 1951 and 1952 Scholars on their college experiences and their views of early admission.

Results: Three-fourths of the Scholars were males. At the time of entrance to college, 29.3 per cent were under 16, 56.4 per cent were 16, and 14.3 per cent were 17 or older. About half of the Scholars had completed grade 11 of high school; 41.9 per cent finished grade 10 only; and 7.1 per cent went through grade 12. The bulk of the Scholars (76.6 per cent of 865 tested) had total scores of 110 and above on the ACE Psychological examination. Approximately three-fourths came from city public schools, 11.1 per cent from suburban schools; 6.5 per cent from rural schools and 9.2 per cent from private schools. The parents were primarily engaged in professional and business occupations; 22.0 per cent were laborers.

Academically, the Scholar groups outperformed their classes as a whole and their Comparison students. The rate of failure among the first two Scholar groups was somewhat higher than among the Comparison group; (11.2 and 11.9 per cent for the Scholars; 8.2 and 9.0 per cent for the Comparison students), it was lower than among the classes as a whole. The reasons for failure were no different than for the college students in general. The Scholars encountered more difficulties in initial adjustment to campus life than the older Comparison students but these problems were minor ones which soon disappeared. In the two institutions in which separate dormitory facilities and other special services were provided, the Scholars had more difficulties of a social nature than in those schools which provided no special treatment.

Among the first two groups of Scholars who graduated, the proportion planning to go on to graduate work was substantially higher than among the Comparison students. Eleven of the 12 colleges incorporated the early admission idea into their regular admissions policy, the twelfth had taken no action.

In all but a few cases where data was available, the Scholars' parents and their high school principals expressed themselves as favorably disposed to early admission. The students themselves responded favorably: 75 per cent of the 1952 group said they felt early admission had been profitable to them and 66 per cent felt that early admission should become a regular part of the admission policy of American colleges.

Comment. Despite the very positive findings from this study as well as those of other researchers, early admission to college had not become a popular means of providing for academically gifted students. The reasons for this are not clear: it may reflect the resistance on the part of the high school principals and staffs to losing their most able students to the colleges and, to some extent, the existing prejudice against the underage college student on the campus.

Portland Public Schools, The gifted child in Portland. Portland, Oregon: the Public Schools, 1959.

Purpose: To develop and refine procedures for identifying outstanding intellectual ability and talent in creative, artistic, mechanical and social areas; to evaluate the results of experimentation with teaching methods, materials, school and class organization; and to determine the characteristics of gifted and talented pupils.

Subjects: Pupils in the various phases of the Portland Cooperative Program for Students with Exceptional Talent. Programs were in both elementary and secondary schools. Approximately 10 per cent of the total pupil population in 14 elementary schools and 4 high schools were involved.

Procedures: A variety of studies was carried out during the second to the fifth year of the program which began in 1952-53. The studies were in eight areas: identification and talent testing, attitudes of gifted students, qualities of leaders, achievement and adjustment of gifted elementary school pupils, follow-up in college of high school graduates, under-achieving high school students, and ability grouping in ninth-grade combined English-social studies classes.

Results: Talent screening devices for identifying pupils gifted in art, music, creative writing, creative dance, social leadership and mechanical talent were developed and tested.

Questionnaire responses by high school students indicated that 85 per cent felt that inclusion in a special program made no difference in their social status, 10-15 per cent felt it had given them prestige, and only 1-2 per cent reported that the program made them unpopular.

A study of the personal qualities children value in their peer leadership involved 750 pupils, grades 6-8. The pupils nominated leaders and gave reasons for their choices. There was a shift between the sixth and eighth grades from "mental ability and effort" to "likeable personal characteristics" as determining their selection. Such a shift may be typical of adolescents in general.

Three studies were undertaken to evaluate the effects of the elementary school program on the pupils' achievement and adjustment. The results of these studies indicated that the pupils who participated in the program had made, and made, and were continuing to make, greater gains in intellectual achievement than comparable youngsters not participating. There seemed to be no ill effects on the general adjustment of participating pupils. Their attitudes and activities suggested that they were making more constructive uses of their superior ability than the matched pupils.

The effects of special classes and seminars on student performance and adjustment in college were examined in two studies. The experimental group achieved a significantly higher total grade point average during the freshman year than did the control group. In general, the studies indicated that the special classes in high school prepared students for college better than did the regular classes.

Three studies related to creative thinking abilities were undertaken. Teachers developed methods for stimulating creativity in the fifth and sixth grade classrooms. However, the results of such instruction were not significantly related to scores on tests of creative thinking. In another study, it was found that pupils expressing authoritarian attitudes showed less sensitivity to problems, less improvising ability, and less originality than equally bright peers who showed non-authoritarian attitudes. In a study of the relationship between creative thinking and conformity, it was found that students scoring high on originality placed greater emphasis on independent thinking and less on "going along with the group."

An intensive study was made of 49 high-achieving and an equated group of 49 underachieving boys in terms of educational, personal and social adjustment, vocational aspirations, and family relations. Information was obtained on some 200 variables. High-achievers characterized themselves as more accomplishing and studious and less lazy than did underachievers. Underachievers more often viewed academic achievement as incompatible with enjoying life and having fun. Most high-achievers had an accurate conception of their own high scholastic ability, while most underachievers though correctly recognizing that their ability was above average, under-estimated their ability. More underachievers expressed relatively negative attitudes regarding school, teachers, and studying. Significantly more underachievers indicated that they would like to be in occupations involving adventure or excitement. High-achievers and underachievers did not differ in their expressed satisfaction with life in general, and the majority of each group expressed themselves as moderately-to-well satisfied. Somewhat fewer high-achievers were satisfied with their relationships with girls; underachievers reported having more dates. In describing the immediate group of friends with which they spend the most time, underachievers significantly more often described their cliques as negative toward school achievement. High-achievers much more often enjoyed emotionally supportive family relations.

A study of the effects of ability grouping as compared to broad-range grouping in ninth-grade combined English-social studies classes indicated that students in both situations made significant gains on most tests used, but neither arrangement proved significantly better than the other. Analysis of teacher logs revealed that generally teachers were not successful in using different content or methods of instruction with the selectively grouped students.

Comment. No brief summary can really do justice to the variety of studies undertaken in connection with the development of the Portland Gifted Child Project. For four of the five years, research and evaluation were integral parts of program development. Most significant were the attempts to identify youngsters with special talent in addition to intellectual aptitudes, the arrangements which brought specialized instruction into the elementary grades, and the program modifications which resulted from careful assessment of on-going experiences.

California State Department of Education, Educational programs for gifted pupils. Sacramento: the Department, 1961.

Purpose: To study the need for special programs for gifted pupils, to determine the costs of such programs, and to analyze the special benefits to be derived from such programs.

Subjects: 929 pupils took part in one of 17 different special programs. Each of the pupils was selected on the basic criterion of a Stanford-Binet IQ of 130 or above. The mean IQ scores were approximately 140 for the various groups. Each of the experimental pupils was matched with a control pupil of same intelligence (within five points), age (within six months), sex, and socio-economic status.

Procedures: Programs were established in school districts of varied sizes. The 17 plans, ranging from grades one through twelve, involved various kinds of enrichment in the regular classroom, acceleration, and grouping. At the first grade level, for example, there was enrichment in the regular class, acceleration, ungraded curriculum, and cluster groups. At the twelfth grade level, there were honors classes and acceleration to university and junior college. The effects of the special programs were evaluated using tests of academic achievement, social relationships and psychological maturity, attitudes, teacher reaction forms, and evaluations of pupils and programs by teachers, parents and pupils. While each of the specific programs was evaluated, they were not compared for relative effectiveness.

Results: The gifted pupils in the special programs attained an achievement level which was unusually high, compared with the total and control populations. The control gifted made gains comparable to the average population but remained as they had begun at the higher level. The gifted in special programs made gains commensurate with their high level of ability--i.e., they started at a higher level of achievement and maintained growth in accordance with expectations based on this unusual ability. All of the achievement data supported the merits of special, individualized programs for the gifted. No adverse effects were found in the friendship choices of pupils who were in special programs. The total group of first, fifth and sixth grade pupils made significant gains in friendship choices when compared with the control pupils. Proper educational opportunity seemed to aid in improving classroom status.

The gifted pupils had desirable personal and social characteristics paralleling their high intelligence and achievement ratings. On retests on the California Psychological Inventory the experimental pupils gained in 19 scales and lost in three, despite high initial ratings. The control gifted gained on nine scales and lost on eight. The students in special groups seemed to have avoided deleterious effects in personal-social-psychological areas. The ratings of pupil attitudes towards school learning (including study habits, critical thinking ability, motivation for learning and self-understanding) were highly favorable in all the special programs and at all grade levels.

Ninety-six per cent of the pupils saw the special program as having been beneficial. The greatest value was perceived as providing pupils with an opportunity to progress at their own rate. Ninety-two per cent of the parents and three-fourths of the pupils strongly favored continuation of the programs. The teachers revealed favorable attitudes toward the various programs in which they had participated. They pointed up a number of problems, but indicated that they had benefited from in-service activities designed to increase their teaching skills and academic knowledge. Total costs and cost per pupil for each district were determined including the cost of identification and of implementing the program.

Comment. Although the study concludes that gifted students enrolled in special programs excelled those who were in regular classes, no attempt has been made to compare one kind of special program with another. In view of the many kinds of special adaptations involved in this research, the difficulty for even a statewide study to make comparisons of the effectiveness among the various provisions is underscored. However, this lack of comparative evaluation represents a limitation in the research design since it leaves the school administrator and program planner without help as to which of the various special programs are most effective for which kinds of youngsters and under what circumstances.

Final Comment. Reviews of research on educational programs for gifted students can be found in the following: K.E. Anderson, editor, Research on the academically talented. Washington, D.C.: National Education Association, 1961; J.J. Gallagher, Analysis of research on the education of gifted children. Springfield: State of Illinois, Office of the Superintendent of Public Instruction, 1960; M.L. Goldberg, Research on the gifted. In B. Shertzer (Ed.), Working with superior students. Chicago, Ill: Science

Research Associates, 1960. Pp. 41-66; and A.H. Passow, Enrichment of education for the gifted. In N. Henry (Ed.), Education for the gifted, Fifty-seventh yearbook, Part II, National Society for the Study of Education. Chicago: University of Chicago Press, 1958. Pp. 193-221.

Research on educational programs has dealt primarily with administrative adaptations and curriculum modifications. Relatively little is known about the relationship between specific educational experience and the nourishment of individual talents. McClelland, the chairman of the Social Science Research Council's Committee on the Identification of Talent (D.C. McClelland et. al., Talent and society: new perspectives in the identification of talent. Princeton, N.J.: D. Van Nostrand Company, 1958) urges that the process by which talent becomes actual become the focus of experimentation and research. Until more is known about "what we are measuring, how it develops under different circumstances, and how it is related to the ultimate criteria of talented performance which we want to predict," there will remain "an outstanding gap in current talent research."